



Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Gina Fiandaca, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator



May 1, 2023

Glenda Velez
U.S. Environmental Protection Agency – Region 1
5 Post Office Square – OEP06-01
Boston, MA 02109-3912

**RE: NPDES PHASE II Small MS4 General Permit
EPA Permit Number MA043025
Massachusetts Department of Transportation Permit Year 20 Annual Report**

Dear Ms. Velez,

Please find enclosed the Permit Year 20 Annual Report, signed by the Administrator Jonathan L. Gulliver. The annual report summarizes the Massachusetts Department of Transportation's (MassDOT's) activities between April 2022 and March 2023 towards meeting the measurable goals outlined in the NPDES Phase II Notice of Intent (NOI), which was submitted to your office in July 2003, and most recently revised on January 11, 2008. MassDOT continues to be authorized to discharge stormwater under the 2003 MS4 permit, while the Environmental Protection Agency (EPA) prepares a transportation specific individual permit for MassDOT. Please feel free to contact Henry Barbaro, Supervisor of Stormwater Management, at (617) 838-2888 or Henry.Barbaro@dot.state.ma.us, if you have any questions or require further information.

Sincerely,

Samantha Dolabany
Deputy Director of Environmental Services
MassDOT Highway Division

Enclosures: NPDES Phase II Small MS4 General Permit Annual Report – Year 20



Municipality/Organization: MassDOT - Highway Division

EPA NPDES Permit Number: MA043025

MassDEP Transmittal Number: _____

Annual Report Number

& Reporting Period: No. 20, April 2022-March 2023

NPDES Phase II Small MS4 General Permit Annual Report

Part I. General Information

Contact Person: Mr. Henry Barbaro **Title:** Supervisor of Stormwater Unit

Telephone #: (617) 838-2888 **Email:** henry.barbaro@state.ma.us

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Printed Name: Jonathan L. Gulliver

Title: Administrator – MassDOT, Highway Division

Date: 4-27-2023

Part II. SELF-ASSESSMENT

The Massachusetts Department of Transportation – Highway Division (MassDOT) has completed the required self-assessment and has determined itself to be in full compliance with the conditions of the 2003 *United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4)*. MassDOT has spent significant time, effort, and funds focusing on the potential impacts of stormwater from its roads and properties this year. MassDOT advanced our stormwater program in Permit Year 20 through continued implementation of the Impaired Waters Program (IWP) and releasing an updated Water Quality Data Form (WQDF), educating staff, conducting public outreach at conferences, performing good housekeeping measures including Stormwater Control Measures (SCM) inspections, and completing a pilot program to map MassDOT drainage infrastructure.

The MassDOT Environmental Services Stormwater Unit (the Stormwater Unit) presently includes one senior environmental scientist who focuses on stormwater management across the Commonwealth and junior environmental scientists who assist in development and maintenance of stormwater management programs. The Stormwater Unit oversees the review of proposed drainage/stormwater management system improvements for all programmed (planned) projects, identifies programmed projects that would benefit from the implementation of structural SCMs, and ensures effective SCMs are designed.

The Stormwater Unit participates in the Statewide Stormwater Coalition and New England DOT Stormwater Coalition and shares experiences and technical transfer. MassDOT's stormwater program continues to be at the forefront of stormwater management for regional state DOTs, and presentations from MassDOT are sought out by conference organizers in the area. MassDOT updated its website on stormwater management this past year with relevant information about its stormwater program and links to tools, trainings, templates, and supporting documentation.

MassDOT continues to follow up on potential illicit discharges identified within its stormwater systems. In Permit Year 20, MassDOT updated its Illicit Discharge Detection and Elimination (IDDE) Webmap to provide updates on its investigations of potential illicit discharges. MassDOT closed five potential illicit issues where follow up field investigations by MassDOT staff indicated that the potential illicit connections or discharges to MassDOT's stormwater system had been removed or addressed. MassDOT has retained consultants to follow-up on other potential illicit discharges that need further investigation.

During construction of SCMs, MassDOT continues to require contractors to implement erosion controls in accordance with site plans to protect receiving waters and wetlands from sedimentation. MassDOT, in conjunction with its consultants, performs site visits when needed to observe contractors' progress on SCM construction and provide recommendations, as necessary.

MassDOT is internally reviewing the draft MassDOT Stormwater Design Guide (SDG, previously known as the MassHighway Storm Water Handbook). The SDG has been significantly revised to ensure MassDOT projects comply with federal and state regulations, as well as MassDOT policies. Major updates (compared to the MassHighway Storm Water Handbook) include discussion of the Impaired Waters Program and WQDF; refined SCM typical designs, guidance, and pollutant credits; and a focus on SCM selection and low impact development.

MassDOT continues to promote pollution prevention and good housekeeping initiatives. Salt material usage, anti-icing equipment upgrades, and training for snow and ice contractors continued to be a focus for MassDOT with the objective of reducing the amount of deicing materials used and effective storage of materials.

MassDOT, with consultant support, continued to implement the IWP to address discharges of highway runoff to impaired waters and completed a number of water quality treatment projects. MassDOT's IWP includes two components: the Retrofit Initiative and the Programmed Projects Initiative.

Through the Retrofit Initiative, MassDOT identifies locations that warrant adding new SCMs along existing roadways. This year, two consulting firms assisted MassDOT in designing retrofit SCMs. There are currently 5 remaining SCM retrofit projects in various stages of design and construction that fulfill the commitments of the Impaired Waters Program. These projects include the design of a broad range of treatment SCMs and provide pollutant reductions to 5 impaired waters. Once the design and advertising of these projects has occurred – the last of which is planned for 2026 – the commitments required by the Conservation Law Foundation (CLF) et al vs MassHighway lawsuit and the related EPA enforcement order, which initiated the Impaired Waters Program being added to MassDOT's Stormwater Management Plan (SWMP) commitments, will be complete.

Through the Programmed Projects Initiative, MassDOT incorporates SCMs into programmed highway projects. Programmed project types have the advantage of being more holistically integrated into highway drainage systems, which often provides more effective stormwater management. To alert designers that the project may potentially impact impaired waters, and to capture information regarding stormwater improvements incorporated into highway designs, MassDOT uses a WQDF submitted by design consultants at the 25% and 75% design stages. Based on the WQDFs submitted in Permit Year 20, MassDOT proposed a total of 18 structural SCMs including 7 infiltration linear practices, 4 bioretention areas, 2 tree pits, 1 bioretention linear practice, 1 subsurface infiltration system, and 1 "other" SCM. Sensitive site design elements for these projects were documented and included measures such as preserving existing vegetation, natural drainage patterns, and riparian buffers; minimizing disturbance to wetland resource areas; promoting sheet flow to vegetated areas; and reducing existing impervious cover.

This past year, MassDOT developed a revised WQDF that replaced the existing 25% and 75% WQDFs. The revised form uses a consistent SCM accounting protocol based on EPA's treatment curve methodology allowing SCM treatment credits to be tracked accurately and consistently based on the latest research. The revised WQDF also provides guidance to designers on treatment requirements for impaired waters and watersheds with Total Maximum Daily Loads (TMDLs) early in the design schedule and will assist MassDOT in tracking pollutant reduction. The revised WQDF was released in October 2022.

The Stormwater Asset Database is an integral part of MassDOT's Asset Management Initiative to collect location and condition data on all assets statewide. Much has evolved since Permit Year 1 when all structures along MassDOT roadways (inlets and manholes) were collected using Light Detection and Ranging (LiDAR) and high-quality imagery. This year MassDOT completed a Drainage Mapping Pilot Program and initiated a statewide mapping effort to improve the

completeness, accuracy, and consistency of stormwater assets through the mapping of MassDOT's stormwater system infrastructure. This mapping effort fills in data gaps and refines drainage infrastructure data so that MassDOT can continue to maintain a properly functioning system while operating a successful stormwater program to minimize environmental impacts and support the safety of the Commonwealth.

Part III. Summary of Minimum Control Measures

The Best Management Practices (BMPs) included in MassDOT's Stormwater Management Plan (SWMP) are summarized in each of the Minimum Control Measure sections below.

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
1A	MassDOT Training Assistance Program (MTAP)	MTAP	Facilitate one training program related to stormwater and /or snow and ice control as a means of reducing source pollution. Document number and topics of the seminars.	<p>Snow and ice control classes were conducted, with 5 in person and virtual classes. Topics covered included:</p> <ul style="list-style-type: none"> • Snow & Ice Operations for Front Line Employees • Snow & Ice Operations for Supervisors • All About Liquids • Spreader Calibration <p>Highway core curriculum classes (available to all of MassDOT) were held:</p> <ul style="list-style-type: none"> • Environmental Permitting - October 3, 2022 <p>Environmental Coordination for Construction - January 23, 2023.</p>	Provide one training program for MassDOT employees (provided by MTAP) and one for municipal DPW snowplow drivers (provided by MTAP/Baystate Roads) related to snow and ice control as a means of reducing source pollution.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
1B	Baystate Roads Program	Baystate Roads	Provide one training program for MassDOT employees and one for municipal Department of Public Works (DPW) snowplow drivers related to snow and ice control as a means of reducing source pollution. MassDOT will document the number and topics of the seminars and include in each annual report.	7 in person and virtual classes were offered during this past permit year. Snow and ice control classes and stormwater management classes were offered which covers topics such as: <ul style="list-style-type: none"> • Snow & Ice Operations for Front Line Employees • Snow & Ice Operations for Supervisors • All About Liquids • Spreader Calibration • Stormwater Regulation, Erosion, and Sediment Control 	Provide one training program for municipal DPW snowplow drivers related to snow and ice control as a means of reducing source pollution.
1C	MassDOT Web Site	IT/ Environmental	Maintain a link for contacting the Highway Department via e-mail. Review and direct emails received to the appropriate department. Evaluate web page annually and revise as necessary.	MassDOT updated the stormwater program webpage in Summer 2022 to allow the public to access related information on the MassDOT stormwater program. The Environmental web page was reviewed and updated. Annual Report 19 was uploaded to the website this past year.	Evaluate web page and update the stormwater program webpage as necessary to reflect the current status and most recent documents. Add the PY20 Annual Report. Continue to post updates to the Water Quality Data Form (WQDF) and the WQDF Web Map.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
1D	Post Contact Names for Municipal Drainage Concerns on MassDOT Web Site	Environmental/ Districts/ Geographic Information Systems (GIS)	<p>1) Distribute a flyer with contact names to municipalities during May 2007 Baystate Roads NPDES Phase II General Permit seminar.</p> <p>2) Post District Highway Director (DHD) contact name for each district on website for municipalities to contact and maintain link.</p> <p>3) GIS group will develop a program to provide easy to use access and allow the public to identify a selected area and review the MassDOT owned roads and outfalls. MassDOT will then review alternatives for alerting towns and the public to the availability of this information.</p>	<p>1) Completed in Year 5.</p> <p>2) DHD contact names continue to be updated on the web site. Go to https://www.mass.gov/info-details/find-your-highway-district-office</p> <p>3) MassDOT continues to refine its Open Data portal, where various data sets are available for view and download by the public. Inspection data for catch basin cleaning is now associated with the drainage inventory. MassDOT has posted the drainage outfall inventory on this web site at this location: https://massdot.maps.arcgis.com/apps/mapviewer/index.html?layers=453ace582fa041459f18bb12a623abe2</p>	<p>1) Completed in Year 5.</p> <p>2) Continue to maintain contact names.</p> <p>3) The drainage inventory is currently being updated through a statewide mapping effort. Mapping will continue through the upcoming year. MassDOT will share drainage inventory information as requested. MassDOT will continue to post additional drainage data, such as inlet data, as they become available.</p>
1E	River and Stream Signs	Traffic Operations	Maintain signs identifying rivers and streams crossed by MassDOT roads, until crossing of all named rivers and streams are signposted.	Under MassDOT's sign replacement program, the interstate/freeway system is broken up into about 52 separate segments. Signs on a given segment are replaced approximately every 18 to 20 years. This work is a cyclical program, with between 2 and 5 highway segments being re-signed in any given year. MassDOT is in the process of replacing four river signs on three interstates/freeways.	MassDOT will continue to install signs as part of MassDOT's sign replacement program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
1F	Anti-litter/ Dumping Messages on VMBs	Operations	Maintain anti-litter message in the message mix on permanent Variable Message Boards (VMBs).	Posted anti-litter message on VMBs during the week of Earth Day (April 24-28, 2022) and additional days throughout the year as conditions allowed.	Post anti-litter message on VMBs during the week of Earth Day and additional days as conditions allow.
1G	Highway Stewardship Literature	Operations / Environmental	Educate the public on the Impaired Waters Program, proper stormwater management, and other environmental stewardship measures.	<p>MassDOT updated the stormwater program webpage in Summer 2022 to provide updates to the public on all information related to the MassDOT stormwater program.</p> <p>Henry Barbaro, representing the Stormwater Unit, was on the Planning/Steering Committee for the 2022 National Stormwater Practitioners Conference held on April 11 to 14, 2022. He presented on TMDLs and Impaired Waters Program as part of a panel on April 12 and presented on Winter Salt Reduction as part of a panel on April 14. Henry also attended the National Stormwater Practitioners Virtual Forum on November 3, 2022, and was a moderator for breakout discussions. Hung Pham also presented the use of Mycofiltration for stormwater improvements at the Transportation Research Board in Washington DC in January 8-12, 2023. VHB, on behalf of MassDOT, presented at the New England Water Environment Association (NEWEA) Annual Conference in Boston on January 25, 2023 on the topic: <i>Optimizing Stormwater Treatment by Using the MassDOT Stormwater Design Guide and Water Quality Data Form.</i></p>	<p>The stormwater program webpage will be updated to reflect the current status and most recent documents.</p> <p>Continue to inform others about MassDOT's various stormwater programs through public outreach. Continue to present relevant topics to the public at conferences and through other means of technical transfers.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
1H	New England DOT Stormwater Coalition Meetings	Environmental	Coordinate with New England DOTs to discuss on-going issues and programs being faced by the DOTs including wetland mitigation, stormwater, and erosion controls.	MassDOT is participating in a New England stormwater forum that meets quarterly. The meetings are attended by stormwater management personnel from all six New England DOTs, and focus on sharing “lessons learned,” best practices, Federal permit compliance, and case studies. The group met five times this Permit Year: 6/13/2022, 10/6/2022, 11/7/2022, 1/26/2023, and 3/7/2023.	MassDOT will continue to participate in the NE DOT forum and communicate with other individual DOTs as the need develops.
1I	Storm Water Coordinator	Environmental	Fund a full-time stormwater coordinator position each year.	The Stormwater Unit staff, consisting of one environmental scientist, consultant assistance, and support staff from the MassDOT Wetlands Unit continue to coordinate compliance with the NPDES MS4 stormwater program across the Commonwealth.	Continue to fund stormwater staff to provide stormwater related assistance. Stormwater Unit anticipates hiring 2 Stormwater Program Coordinators this year.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
1J	Water Quality Data Form (WQDF)	Environmental	Develop and update as necessary a water quality data form for designers to promote and incorporate proper stormwater management into design submissions. Implement on all projects.	<p>The WQDF has been developed and is being used for submittal at 25% design and 75% design stage to MassDOT by internal designers and consultants. The WQDF was revised and released in October 2022 to promote treatment to address TMDLs and stormwater-related impairments. A training video for WQDF users was developed and posted to the MassDOT website.</p> <p>This year, MassDOT received 56 WQDFs. Based on the forms submitted, MassDOT proposed a total of 18 structural SCMs including 7 infiltration linear practices, 4 bioretention areas, 2 tree pits, 1 bioretention linear practice, 1 subsurface infiltration system, and 1 “other” SCM. Additionally, the form documented site sensitive design measures included in these projects.</p>	<p>MassDOT designers and consultants will continue to submit the forms at 25% and 75% Design Submittals. Additionally, MassDOT will:</p> <ul style="list-style-type: none"> Continue to update MassDOT stormwater asset geodatabase to accurately track SCM design and pollutant reduction data. Continue to educate designers on how to accurately and comprehensively complete the WQDF. Continue to keep the WQDF up-to-date with new approaches to address TMDLs, stormwater-related impairments, and pollutant load reduction information.
Addn.	Transportation Research Board (TRB) National Cooperative Highway Research Program (NCHRP) Committee(s)	Environmental		MassDOT did not participate in any further NCHRP studies during this past permit year.	The NCHRP is administered by the Transportation Research Board (TRB). MassDOT will continue its involvement in stormwater related panels and events by both the NCHRP and TRB as the opportunities arise.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
Addn.	WPI/DEP/ DOT – Massachusetts Water Resource Outreach Center (WROC)	Environmental	Support WROC in requests related to information sharing, such as development of a standard procedure for communicating about drainage infrastructures between MassDOT and municipalities as they continue to map out their drainage system, especially when it comes to the interconnections between municipalities and MassDOT.	No specific coordination with WROC and MassDEP regarding mapping of drainage systems was necessary this past year.	MassDOT will continue to assist in providing mapping information to municipalities, provide training in mapping efforts, and lead to standardize drainage infrastructure schemas, as needed. This includes providing interconnection information between MassDOT and municipalities for O&M responsibilities.

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
2A	Project Related Public Notification and Public Participation Requirements	Environmental	Continue compliance with federal and state public notification and public participation requirements including but not limited to Wetlands Protection Act, Clean Water Act 401 Water Quality Certification, Army Corps of Engineers 404 Permit, and Massachusetts Environmental Policy Act/National Environmental Policy Act (MEPA/NEPA).	MassDOT continues to comply with federal and state public notification and public participation requirements. MassDOT conducted 85 design public hearings and public information meetings in this permit year. See Appendix D for a full list of meetings. This does not include the numerous public participation meetings held for various permit processes throughout the year.	MassDOT will continue to comply with federal and state public notification and public participation requirements.
2B	Adopt-a-Highway	Adopt-a-Highway	Continue to support program.	MassDOT maintained, repaired, and replaced program signs as needed. 750 miles of roadway shoulder are covered by the Adopt-a-Highway and Sponsor-a-Highway programs.	MassDOT will continue to support and promote this program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
2C	Call-In Numbers for Roadway Debris	Operations	Maintain Call-In Numbers for Roadway Debris	<p>MassDOT has a general call-in number for the public to use to alert MassDOT of roadway debris. Contact information can be found here: https://www.mass.gov/orgs/highway-division</p> <p>MassDOT provides the Highway Assistance Program (HAP), an emergency roadway assistance service, along the most highly traveled roadways in Massachusetts. HAP patrols 982,000 miles annually and removes roadway debris when encountered, in addition to other services.</p>	Maintain call-in numbers and providing active responses.
2D-1	MassDOT Web Site	IT/ Environmental	Post Storm Water Management Plan (SWMP) to web site.	The most recent MassDOT SWMP is posted on MassDOT's stormwater web site.	MassDOT will post the 2023 updated SWMP on the MassDOT stormwater website.
2D-2	MassDOT Web Site	IT/ Environmental	Post annual reports to the web site.	Annual Report for Permit Year 19 is posted on the MassDOT's stormwater web site.	Permit Year 20's Annual Report will be posted to the MassDOT stormwater web page for public access within 30 days of submittal to EPA and DEP.
Addn.	Participate in local cleanup days	Districts	Assist with local cleanup efforts, as appropriate.	District 3 picked up bags of trash in Boxborough on Route 111, at Exit 14 off of I-190 in Sterling, and four times on Route 9 in Framingham.	Continue to participate in local clean-up efforts, as appropriate.

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
3A	Rest Area Leases	Environmental/ Right-of-Way	Summarize new rest area leases issued each year in the annual report.	No new rest area leases were issued during Permit Year 20, so there was no new drainage information. Rest area leases are long term (20-year), master leases. They are due to expire in 2025.	MassDOT anticipates a Request for Proposal (RFP) to be issued this year for all service plazas. Any new rest area leases will be summarized in the Annual Report.
3B-1	Drainage Inventory Specifications	Environmental/ Construction/ Planning/ IT Section	Develop and implement methodology for securing drainage information from future construction and redevelopment projects.	<p>As part of the Impaired Waters Program, MassDOT consultants have continued to improve upon MassDOT's drainage mapping. MassDOT has developed a geospatial database, known as the SCM data layer, to inventory the stormwater treatment improvements being identified, designed, and installed as part of the retrofit program. This data is submitted at the completion of the design. The SCM data layer is part of MassDOT's geospatial Stormwater Asset Database which documents all drainage assets including inlets, pipes, and outlets.</p> <p>For programmed projects, the WQDF submitted as part of 75% design provides geospatial information on existing and proposed stormwater improvements thereby adding to the data layer.</p>	The stormwater asset database will continue to be updated as project designs reach milestones. MassDOT will continue to use the WQDF to capture information from programmed projects.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
3B-2	Drainage Inventory	Environmental/IT/ Districts	Map drainage discharges within urbanized areas. By the end of the permit term complete inventory of urbanized areas and include summary of resource areas with outfalls. Review methods to make outfall inventory available to the public for ease of access.	<p>Outfall inventory was completed in Permit Year 5 and is available on GeoDOT. MassDOT has received several requests for information and have been able to respond relatively quickly.</p> <p>MassDOT continued the mapping effort to update the Stormwater Asset Database. Methods to collect this data included a combination of desktop mapping and field mapping. In addition to data related to stormwater assets, MassDOT has started to map potential interconnections between the MassDOT and non-MassDOT stormwater networks.</p>	Continue to maintain outfall inventory on GeoDOT. MassDOT will work towards collecting additional data on drainage assets in accordance with the Asset Management Initiative. The drainage system mapping will be expanded upon by consultants, co-ops, and interns.
3C-1	Drainage Connection Policy	Environmental	<ol style="list-style-type: none"> 1) Issue Drainage Connection Policy. 2) Post copy of policy on MassDOT web site. 3) Enforce the provision through referrals to the Attorney General office. 4) Summarize actions taken in the annual report. 	<ol style="list-style-type: none"> 1) Policy issued on June 26, 2006 by the Chief Engineer 2) Policy posted at https://www.mass.gov/doc/massachusetts-highway-department-drainage-connection-policy/download 3) and 4) See Appendix A for illicit connection/discharge issues and actions during this permit year. 	Continue to implement Drainage Connection Policy as necessary.
3C-2	Drainage Tie-In Standard Operation Procedure (SOP)	Environmental/Legal	Issue a revised Drainage Tie-In SOP.	The Drainage Tie-In SOP has been finalized. It was officially issued on March 19, 2012. The SOP continues to be utilized for tie-in issues and procedures.	The Drainage Tie-In SOP will continue to be utilized for tie-in issues and procedures.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
3D	Illicit Connection Review	Environmental/ Districts	<ul style="list-style-type: none"> • Develop prioritized list for IDDE and include in Permit Year 5 Annual Report. • Release RFR for development and implementation of IDDE surveys for watersheds on prioritized list. • Field review complaints/potential IDDEs identified by District personnel, during the drainage inventory, in response to municipalities requesting suspect areas and/ or from public throughout the year. 	<p>Past IDDE surveys have identified few connections relative to the funds and time expended required to conduct the surveys.</p> <p>MassDOT actively addresses complaints/potential IDDEs identified by District personnel, during the Impaired Waters Program work, in response to email requests from municipalities or the public throughout the year. A summary of on-going activity is included as Appendix A of this report.</p> <p>MassDOT discussed these potential illicit connections with the appropriate MassDOT Districts to determine if the connections were previously permitted or required drainage tie-in permits.</p> <p>This permit year, MassDOT closed out five IDDE investigations and distributed 3 notice of violations (NOVs) requiring that unpermitted drainage tie-ins either plug their connections or file for a Drainage Tie-In Permit.</p>	MassDOT will proactively address complaints/potential IDDEs and we will provide a summary of IDDE activity in the Annual Report.
3E	Resident Engineer (RE) Illicit Connection Training	Construction	Provide training on illicit connection policy, illicit connection identification, and protocol for reporting during annual Resident Engineer training seminars.	MassDOT continues to provide illicit connection related information at RE trainings. A total of 6 RE trainings were conducted this past year.	MassDOT will continue to provide trainings as on illicit connection policy, illicit connection identification and protocol for reporting at RE training seminars.
3F	Maintenance Staff Illicit Connection Training	Environmental	Provide training on illicit connection policy, illicit connection identification, and protocol for reporting during annual training seminars for maintenance personnel.	MassDOT continues to provide illicit connection related information at Environmental Awareness training which was conducted on March 30, 2023. Additionally, stormwater staff watched the Central Massachusetts Regional Stormwater Coalition (CMRSWC) IDDE Workshop video training on March 31, 2023.	MassDOT will continue to conduct annual trainings on IDDE protocols.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
3G	Standard IDDE Letter	Environmental/ Legal	Create a standardized letter to make the early stage of the IDDE procedure more efficient. The letter will alert property owners of illicit and/or unauthorized discharges and connections from their property that tie into MassDOT's drainage system. The letter will also recommend that the property owners apply for a non-vehicular access permit in accordance with the MassDOT Drainage Tie-in SOP.	Measurable goal met in Permit Year 11. MassDOT uses the Notice of Violation (NOV) letter for notifying property owners of unpermitted connection violations. Appendix A lists which potential illicit connections were identified as needing NOV letters sent to the property owners.	Send the standardized NOV letter to property owners for any new event involving illicit and/or unauthorized discharges and connections that tie-in to MassDOT's drainage system.

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
4A	MassDOT Project Development & Design Guide	Environmental/ Construction/ Projects	Drainage systems for MassDOT roadways will be designed in accordance with Chapter 8 of the Project Development & Design Guide and companion manuals.	All MassDOT projects will continue to be designed in compliance with the erosion and sediment control requirements in the design guide.	All MassDOT projects will continue to be designed in compliance with the erosion and sediment control requirements in the latest design guide.
4B	MassDEP Stormwater Management Standards	Environmental/ Construction/ Projects	New construction and redevelopment activities will comply with Massachusetts DEP's Stormwater Standards under the Wetlands Protection Act (WPA) and Section 401 of the Clean Water Act (CWA).	MassDOT designs continue to comply with the Stormwater Management Standards when projects are subject to the WPA and Section 401 of the CWA.	MassDOT designs will continue to comply with the Stormwater Management Standards when projects are subject to the WPA and Section 401 of the CWA.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
4C	NPDES Construction General Permit	Construction	1) File Notices of Intent (NOIs) for new projects which disturb more than one acre. 2) Summarize NOIs issued to MassDOT in annual report.	MassDOT Districts reported a total of 85 projects that included submittal of NOIs and development of Stormwater Pollution Prevention Plans (SWPPPs) for compliance with NPDES construction general permit during Permit Year 20. The projects are listed in Appendix E.	Continue to file NOIs for new projects which disturb more than an acre.
4D	Other State Environmental Regulations or Policy	Environmental/ Construction/ Projects	Projects will continue to be designed and constructed in accordance with all applicable state and federal environmental regulations or policy (e.g., Wetlands Protection Act, 404).	The Environmental Section reviews all projects no later than the 25% design stage to determine what environmental permits are required. The District Environmental Engineer or equivalent District construction staff person attends all pre-construction meetings with the selected contractor to review permit requirements for the project.	The process of design review and pre-construction coordination will continue.
4E	Storm Water Handbook	Environmental/ Construction/ Projects	Develop MassHighway Storm Water Handbook. All new construction and redevelopment projects must comply with the Handbook.	<p>MassDOT requires that all new construction and redevelopment activities undertaken by MassDOT, or by others that are funded in whole or in part by MassDOT, comply with the MassHighway Storm Water Handbook.</p> <p>MassDOT is currently completing the final review of the new MassDOT Stormwater Design Guide (SDG), formerly known as the MassHighway Storm Water Handbook. The SDG is composed of four chapters which include discussion of stormwater and regulatory framework, the concept of Integrated Site Design, and design guidance on structural stormwater control measures (SCMs). The SDG is for designers to reference and use as part of the SCM design process on MassDOT highway projects.</p>	MassDOT anticipates the SDG to be published in 2023.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
4F	Standard Specification for Highways and Bridges	Environmental/Construction/Projects	Continue to include Subsection 7.02 “Prevention of Water Pollution” of the Standard Specification for Highways and Bridges in MassDOT funded construction projects.	<p>Inclusion of pollution prevention controls is standard practice for construction contracts issued by MassDOT.</p> <p>A contract item/specification is included in each contract which requires a detailed Storm Water Pollution Prevention Plan (SWPPP)/Erosion Control Plan (ECP) for all projects (except minor projects such as signage, grass mowing, etc.). Having the contractor develop the SWPPP and ECP (rather than the designer) has been accepted by the Conservation Commissions and DEP on a project-by-project basis.</p> <p>In addition, the Stormwater Unit ensures that all construction contracts include items for sediment removal and disposal from pipes and drainage structures within the project area.</p>	Such controls will continue to be included in construction contracts issued by MassDOT.
4G	Pre-Construction Meeting Review of NPDES Requirements	District Environmental Staff/Construction	District Environmental Staff review NPDES requirements at the applicable pre-construction meetings.	MassDOT reviews the NPDES Construction General Permit (CGP) requirements (i.e., SWPPP) with Contractors at the pre-construction meeting. These meetings include outlining the requirements of the CGP and identifying the roles and responsibilities of MassDOT and the Contractor. MassDOT Environmental Engineers attend all pre-construction meetings which involve environmental permits, not limited to NPDES. Therefore, erosion control is discussed at all pre-construction meetings.	MassDOT will continue to review the NPDES CGP requirements with Contractors at the pre-construction meeting.
4H	Contract Bid Item and Special Provisions	Construction Section/Contracts	A Special Provision/ Pay Item will be included in new construction contracts to cover the preparation of a SWPPP.	A special provision is included in all new construction contracts which will disturb one or more acres.	Special provision will continue to be included in all appropriate project contracts.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
4I	Field Guide on Erosion Prevention and Sediment Control	Construction Section/ Chief Engineer	Prepare field guide and issue to Resident Engineers.	The guide was developed and issued to resident engineers at winter training in December 2013.	Measurable goal complete.
4J	Stormwater Pollution Prevention Plan (SWPPP) Guidance for Contractors	Construction Section/ Districts	Prepare a SWPPP Guidance for Contractors on MassDOT construction projects. Implement use of the document on all appropriate MassDOT projects and include SWPPP bid item in all applicable contracts.	SWPPP bid item was added to contracts as standard practice, where applicable, by Permit Year 4. SWPPP bid item which includes an Erosion Control Plan is included in all contracts with over 1 acre of soil disturbance.	Continue to include SWPPP bid item, where applicable, in MassDOT projects bid documents.
4K-1	Annual Erosion Prevention/ Sediment Control Training	Construction Section	Conduct annual Erosion Prevention and Sediment Control Training for MassDOT Construction Personnel. Summarize # of trainings and topics covered.	Resident Engineer (RE) winter seminars covered: roles and responsibilities; NPDES permitting and amendments; erosion and sediment control; dust; noise; landscape; HazMat; Diesel Retrofit Program; Chapter 007 – Environmental Compliance; and Chapter 200 – Drainage of the RE Inspection Manual. A total of six RE trainings were conducted this past year.	MassDOT will continue RE trainings on topics similar to those discussed in the past.
4K-2	Non-Traditional Erosion Control Specifications	Landscaping Section	Develop specifications for non-traditional erosion controls and evaluate research being conducted by other state DOTs that can be accepted by MassDOT Research and Materials Section. As new technologies are developed, review and develop specifications for additional erosion controls.	MassDOT continues to use compost filter tubes as the default for sediment controls. MassDOT has been conducting research, with the input of nationally recognized experts, to update its specifications to state-of-the-practice and to establish basis for vendor pre-qualification.	MassDOT intends to continue to solicit input from the industry on slope stabilization.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
4L	Annual Construction Bulletins	Construction Section	Issue annual construction bulletins to each District regarding stormwater issues, as applicable.	Construction bulletins were not issued for this permit year, however, several erosion and sediment control resources in addition to trainings were distributed throughout the district offices.	Bulletins, regarding stormwater issues, be issued in the Fall of 2023, as necessary.
4M	Solicit Construction Activity Feedback from Public	Construction Section/ IT	Maintain MassDOT website to include contact information for ongoing construction activities. Respond to concerns submitted in a timely manner.	MassDOT maintained their website to include contact information for ongoing construction activities. MassDOT responded to concerns submitted in a timely manner.	MassDOT will continue to maintain the website to include contact information for ongoing construction activities. MassDOT will respond to concerns submitted in a timely manner.
4N	Construction Runoff Control Enforcement	Construction Section/ Districts	MassDOT District Construction personnel and District Highway Director will monitor for compliance with the CGP and SWPPP, as well as non-compliance with any applicable environmental permits, and work with contractors to address non-compliance swiftly. Measures can include monetary penalties, where included in contracts, and deductions or delays in payment, when warranted. Summarize measures taken to address non-compliance observed on MassDOT projects.	Non-compliances were observed and resolved at 5 MassDOT projects and MassDOT personnel worked with the contractors to address the issues swiftly. <ol style="list-style-type: none"> 1. Stow (Project no. 605342): Unauthorized impacts to Waters of the US (WOTUS). A USACE permit amendment and NEPA Re-evaluation were completed. 2. Hinsdale (Project no. 606406): Improper placement of sediment erosion controls which were promptly remedied by the contractor. 3. Taunton Rt 44 (Project no. 605888): Construction debris found in resource area along with dewatering and discharges to resource areas issues. The project team (MassDOT and contractor in cooperation) promptly removed/ addressed the issues. 4. Charlemont (Project no. 608644): Siltation observed within the Chickley River along with unpermitted alteration to bordering vegetated wetland. The contractor developed and implemented 	MassDOT District Construction personnel will continue to address non-compliance issues identified by working with the contractor to address issues quickly. Measures may include monetary penalties or deductions or delays in payment to the Contractor, when warranted.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
				<p>a comprehensive restoration plan.</p> <p>5. Middlesex Turnpike (Project no. 29492): Various unauthorized discharges to wetland, river areas, and catch basins. Contractor promptly addressed the issues through various solutions including deployment/reinstallation of turbidity curtain, plugging a pipe, employment of additional perimeter controls, cleaning catch basins once work was complete, and using different equipment to install sheeting.</p>	
4O	Standard Practices Memo	Construction Section	MassDOT will prepare and issue a Standard Practices memo to Construction Engineers on the protocol for Illicit Discharge Detection and Elimination during construction projects.	MassDOT determined a separate SOP was not warranted but instead procedures were developed and, during Permit Year 4, the District Construction offices were provided with the procedures to follow on discovery of any illicit discharges during construction and provided training to the Resident Engineers.	No further action warranted.
4P	Contractor Inspector Training	Construction Section	Modify NPDES SWPPP item to include half day training requirement.	SWPPP Item 756 requires contractors to be trained in accordance with the Construction General Permit.	MassDOT will continue to add this item to contracts.
4Q	Drainage Structure Sediment Removal	Environmental/Design	Include removal of sediments from drainage structures as a standard item on all construction projects.	MassDOT bid items 227.3 (removal of drainage structure sediments) and 227.31 (removal of drainage pipe sediments) are included in all MassDOT bid estimates to ensure drainage structures within the project limits are cleaned after construction is complete, as necessary.	Continue to include drainage structure sediment removal bid items in all construction projects.

5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
5A	Storm Water Handbook	Environmental	<ol style="list-style-type: none"> 1) Secure DEP ratification for MassHighway Storm Water Handbook. 2) Design projects in compliance with the most current MassDOT Stormwater Design Guide/ Handbook 	<p>Measurable goal complete for the original MassHighway Storm Water Handbook.</p> <p>MassDOT is currently revising the Storm Water Handbook, now known as the MassDOT Stormwater Design Guide (SDG), to address current MassDEP regulations, MassDOT policy changes, and TMDL requirements. MassDOT determined that, given the extent of the changes in its Stormwater Program (e.g., Impaired Waters Program, the use of WQDFs, design and maintenance policies, SCM selection with an emphasis on pavement disconnection and stormwater infiltration, SCM inventory and inspection), that the Storm Water Handbook needed more of a re-write than just an update.</p>	MassDOT anticipates the SDG to be released in 2023.
5B	MassDOT Roadway Maintenance Program	Maintenance	Continue to implement MassDOT maintenance program statewide.	<p>MassDOT has performed inspections, cleaning, and maintenance on its drainage system (e.g., catch basins, SCMs).</p> <p>MassDEP is considering a special consideration for MassDOT to implement a programmatic, asset-management based maintenance program. MassDOT has started an outline for a Programmatic Operations and Maintenance (O&M) Plan which includes sensitive receptors (e.g., TMDL water bodies).</p>	<p>MassDOT will continue to conduct inspections and maintenance on its drainage system.</p> <p>MassDOT is planning to develop the first draft of the Programmatic O&M Plan and will utilize the plan for drainage maintenance.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
5C	Identify Innovative Stormwater Control Measures (SCMs) Appropriate for MassDOT Projects	Environmental	Identify innovative SCMs appropriate for MassDOT highway projects.	<p>Through funding from the Federal Highway Administration (FHWA) State Planning and Research (SPR), MassDOT conducted research on mycofiltration and the use of fungi in stormwater management technology. Mycofiltration utilizes mycelium or fungal webs as biological filters within organic matter and soil substrates. Six mycofiltration system SCMs were discussed that can augment and enhance already existing MassDOT best management practices, such as Myco filter tubes and myco bioretention.</p> <p>MassDOT continues to review each project for the potential to include innovative and low impact development type SCMs. Reduction of existing unused pavement and use of porous pavement are two examples of innovative applications used in MassDOT projects.</p>	MassDOT continues to identify innovative SCMs for transportation projects.
5D	Highway Runoff Contaminant Model	Env. Div. Consultant	Develop and calibrate contaminant loading model (Stochastic Empirical Loading and Dilution Model - SELDM).	<p>MassDOT continues to work with the United States Geological Survey (USGS) in the development and potential use of SELDM.</p> <p>MassDOT developed a load and SCM credit calculator using the treatment curve data from EPA and incorporated it into MassDOT's revised WQDF released this past fall.</p>	MassDOT will use the data collected by the revised WQDF to estimate loading and pollutant treatment for all of its inventoried SCMs where data is available.
5E	Right of Way Parcel Evaluation	Environmental	Develop and implement a program of evaluating parcels which are candidates for disposal by MassDOT for their potential in siting SCMs.	MassDOT Environmental Section reviewed seven Right of Way canvasses. None of these canvasses had potential for stormwater management.	The Environmental Section will continue to review canvasses as they are presented. The emphasis will remain on keeping parcels of land that are highly suitable for stormwater treatment (as well as wetland replication).

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
5F-1	Post Construction Runoff Enforcement- Illicit Discharge Prohibition Policy	Commissioner/ Legal/ Environmental	<p>1) Develop policy for addressing unauthorized connections to the MassDOT's drainage system.</p> <p>2) Enforce the provisions through referrals to the Attorney General.</p> <p>3) Summarize actions taken in annual report.</p>	<p>Illicit Discharge Policy was issued in June 2006. The policy indicated that failure to comply with the Department's request to address IDDE will necessitate further action by the Department either through the State Attorney General's office or the district.</p> <p>There were no referrals to the Attorney General's office this permit year.</p> <p>The standard Notice of Violation (NOV) Letter is being used by the districts.</p> <p>The IDDE Table in Appendix A has been updated to reflect the current status for each potential illicit discharge.</p>	MassDOT will continue to enforce the Illicit Discharge Policy and work towards resolution of possible illicit discharges.
5F-2	Post Construction Runoff Enforcement- Drainage Tie-In Policy	Commissioner/ Legal/ Environmental/ Districts	Develop permitting process for adjacent properties which would like to tie into MassDOT drainage system. Implement program and summarize actions taken under program in annual report.	MassDOT developed a Drainage Tie-In Standard Operating Procedure (SOP) in 2012 and has been implementing it since then to provide a permitting process for adjacent properties to connect to MassDOT's drainage system. The permitting process includes demonstrating that flow being discharges will only consist of stormwater (i.e., not illicit). Appendix A lists the status of potential illicit connections that were determined to be stormwater only and which MassDOT will request the owners to obtain tie-in permits or disconnect.	The Drainage Tie-In SOP will continue to be implemented for tie-in issues and procedures.
5F-3	Post Construction Runoff Enforcement- Offsite Pollution to MassDOT Drainage System	Commissioner/ Legal/ Environmental	Runoff not meeting the NPDES MS4 requirements which is reaching the MassDOT MS4 and is not covered under 5H-1 or 5H-2 may be considered trespassing and referred to the Attorney General's (AG's) office by MassDOT counsel at the DHD's discretion.	Appendix A lists the status of potential illicit drainage connections to the MassDOT MS4. No connection issues were referred to the AG's office this permit year.	MassDOT will continue to take action when Drainage Tie In Policy requirements are not met.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
5G	Transportation Evaluation Criteria	Planning/ Metropolitan Planning Organizations (MPOs)	Continue to include environmental considerations in the funding prioritization evaluation.	MPOs continued to include the environmental component in their evaluation procedures. MassDOT has an environmental review process for project reviews and which the Stormwater Unit is integrally involved in.	Continue to include environmental component in evaluation procedure.
5H	Federal Enhancement Funding	Planning	Explore opportunities for using Federal enhancement funding for environmental restoration and pollution abatement projects. Participate in quarterly committee meetings.	This past year funding for structural stormwater improvements is received through the FHWA Surface Transportation Block Grant (STBG) under Roadway Improvements. MassDOT has continued to secure funding for the Impaired Waters Program. MassDOT has advertised roughly \$55M in stormwater improvements from Federal Fiscal Year (FFY) 2009 to FFY 2022.	Continue to utilize available federal funding for the Impaired Waters Program. MassDOT anticipates advertisement of approximately \$1,500,000 in stormwater improvements in FFY 2023 and \$1,500,000 in stormwater in FFY 2024.

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6A-1	Source Control – Call-In Numbers for Roadway Debris	Operations	Maintain Call-In Number for Roadway Debris	<p>MassDOT has a general call-in number for the public to use to alert MassDOT of roadway debris at 1-857-368-3500 or via MassDOT's website https://www.mass.gov/orgs/highway-division. District contact information can be found at this link: Find your Highway District Office Mass.gov</p> <p>MassDOT provides Highway Assistance Patrol (HAP), an emergency roadway assistance service, along the most highly traveled roadways in Massachusetts. HAP patrols 982,000 miles annually and removes roadway debris when encountered.</p>	The call-in numbers and website will continue to be utilized for the public to alert MassDOT about roadway debris.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6A-2	Source Control – Adopt-a-Highway	Adopt-a-Highway/ Operations	Continue to support this program by maintaining signs in areas where the program is active. Summarize number of road miles cleaned and/or number of pounds or bags of litter removed.	MassDOT continues to support this program. During Permit Year 20, approximately 94,000 bags of litter were picked up statewide. MassDOT continues to maintain, repair, and replace program signs as needed. See Appendix H for a summary of litter programs.	MassDOT will maintain or increase the current level of sponsors and increase volunteer participation.
6A-3	Source Control – Deicing Programs and Reduced Salt Areas	Environmental/ Districts	Continue to support Deicing and Reduced Salt Areas Programs.	MassDOT continues to support the Deicing and Reduced Salt Areas Programs, although the current focus is on statewide material efficiency and reduction, rather than specific reduced salt areas. The Material Usage Committee meets as necessary to discuss snow and ice initiatives, material usage and research opportunities.	Material Usage Committee will continue to meet as needed and discuss snow and ice initiatives and material usage issues. A study on pre-treated road salt is anticipated to begin in 2023.
6A-4	Source Control – Highway Assistance Program (HAP, formerly HELP)	HAP Program/ Operations	Continue to provide Highway Assistance Program vans and/or tow trucks, flatbed incident response operators, and emergency service patrols.	<p>MassDOT provided 32 Highway Assistance Program (HAP) vans and/or tow trucks. The HAP vehicles cover 27 patrol routes on Massachusetts’ most highly traveled roads and patrols approximately 948,000 miles annually. Roadside Assistance Mass.gov. Additionally, MassDOT provided vehicles and staff for the following programs:</p> <ul style="list-style-type: none"> Incident Response Operators (IRO): There are 8 operators driving 6 different ramp trucks covering I-90, TWT E/W, 93N, 93S, Tobin/Leverett, Sumner/Cal, and parts of 1A. Emergency Service Patrols (ESP): There are 14 ESP vehicles in service which covers I-90 from Boston to the New York border. 	MassDOT will continue to maintain this program.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6A-5	Vegetation Management	Landscape Design	1) Develop a generic 5-year Vegetation Management Plan (VMP) which outlines methods of minimizing the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers. 2) Prepare a Yearly Operational Plan (YOP). 3) Post YOP on web site within 30 days of approval. 4) Summarize actions taken in previous year in annual report.	MassDOT has submitted to Massachusetts Department of Agricultural Resources (MDAR) a 5-Year VMP for review for years 2022-2026. Rather than starting a split season in 2022, the new VMP will start in spring of 2023 with a corresponding Yearly Operating Plan issued within 30 days.	MassDOT awaits the approval of the VMP by the MDAR Pesticide Board. MassDOT expects very limited spraying statewide, mostly for treatment of invasive plants.
6A-6	Ridesharing	Planning	Continue participation in ridesharing activities through the duration of the permit term.	MassDOT continues to support this program through: <ul style="list-style-type: none"> • operation of the High Occupancy Vehicle (HOV) lanes on I-93 • toll discount program on I-90 for HOVs 	MassDOT will continue to support this program.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6A-7	Alternative Transportation	Planning	Provide technical assistance and funding for bicycling and walking, including on-road and off-road improvements, at the local level.	<p>MassDOT continues to utilize Transportation Alternatives Program (TAP) and Congestion Mitigation and Air Quality (CMAQ) funding to fund bicycle and walking infrastructure improvements as part of the Safe Routes to School Program and other transportation improvement projects.</p> <p>MassDOT, in partnership with the Baker-Polito Administration, created the emergency Shared Streets and Spaces funding program. As of 2022, the program has provided \$50 million in technical and funding assistance to help Massachusetts cities and towns conceive, design, and implement tactical changes to curbs, streets, and parking areas in support of public health, safe mobility, and renewed commerce, with a special focus on improving bicycling and walking.</p> <p>The 2021-2025 Capital Investment Plan has 75 programs that guide specific types of investment. One program allots \$60 million to fund the implementation of projects initiated in the 2019 Bicycle and Pedestrian Plans. An additional \$200 million funds the Shared Use Paths/Bicycle and Pedestrian Program.</p>	<p>MassDOT will continue to provide funding for bicycle, walking, and complete streets enhancements across the state.</p> <p>MassDOT will continue to update the statewide pedestrian and bicycle plans.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6A-8	Highway Safety	Highway Design	1) Incorporate safety measures into all new highway designs. 2) Provide signage to warn of vehicle hazards including tipping hazards and steep grades. 3) Install variable message boards (VMBs) on selected roadways to improve driver awareness. 4) Include evolving safety technologies as part of future highway design projects as they are developed.	Safety measures are included in all new highway designs including appropriate signage and evolving technologies. MassDOT installs and maintains VMBs on select roads to improve driver awareness to potential safety hazards.	MassDOT will continue to support this program.
6A-9	Pollution Prevention Task Force	Environmental	1) Maintain an active Pollution Prevention Task Force (PPTF) throughout the permit term. 2) Provide summary of actions taken on each pollution prevention initiative included in the SWMP in the annual report.	MassDOT continued the practice of indoor storage of raw materials (oils, chemicals, salt) and operation/ maintenance equipment. Hazardous materials/ hazardous waste are covered either in the depot garage bays or hazardous waste storage sheds. MassDOT continued enforcement of the indoor-only vehicle washing policy; no soap or power washing outside. All Standard Operating Procedures can be found here: https://www.mass.gov/lists/forms-documents-massdot-environmental-services	MassDOT will continue monitoring for proper handling and management of stormwater polluting materials, solid wastes, and industrial wastewater. MassDOT will follow the SOPs and the SWMP will be updated to reflect the latest pollution prevention measure initiatives.
6B-1	MassDOT Training Assistance Program (MTAP) and Baystate Roads Program	MTAP/ Baystate Roads	Continue to support MTAP and Baystate Roads program.	Because this training is for MassDOT staff and contractors, this BMP is reported under 1A (Public Education and Outreach).	See BMP 1A.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6B-2	Environmental Awareness Training	Environmental	Provide annual training to maintenance facility personnel regarding good housekeeping/ spill prevention.	Hands-on field training was conducted with small groups or individuals at each of their respective workplaces. Training was provided for an estimated 82 personnel. Topics covered included: <ul style="list-style-type: none"> • Vector truck operation and maintenance • Catch basin cleaning and disposal • Hazardous materials management • Street sweeping and disposal 	MassDOT will again provide annual training to maintenance facility personnel regarding good housekeeping practices and spill prevention.
6B-3	Snow and Ice Program Training	Highway Operations	Provide annual training to supervisors and drivers annually on the latest on snow and ice removal.	Approximately 19 classes were held throughout the permit year providing training on snow and ice operations and source pollution reduction. Attendees included State winter operations personnel and hired snow & ice contractors and there were approximately 669 attendees in total. Topics covered included: <ul style="list-style-type: none"> • Current vendor contract • Anti-icing • Department operations • Salt and environmental considerations • Drainage systems 	MassDOT will continue to provide training and focus on operational efficiency and effectiveness. Topics to discuss will include material usage data, technology and cause and effect of snow & ice operations and environmentally sensitive areas.
6B-4	Equipment and Vehicle Safety Training	Highway Operations	Ensure all equipment and vehicle operators have received training on the proper operation of the equipment and vehicles they operate.	Various MassDOT districts have hosted trainings for maintenance personnel this past permit year on the correct usage of construction and maintenance equipment, including but not limited to street sweepers, front end loaders, bucket trucks, woodchippers, lane closures, safe equipment handling, safety tailgate training, forklift operation, mowers, trenching and excavation safety, and chainsaw safety.	MassDOT will provide operational, safety, and maintenance training on sweeper training, mower training, and snow and ice equipment training. Training is based on the District's needs and requests.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6C-1	Maintenance Program	Districts	<p>1) Continue to implement maintenance schedule outlined in the MassDOT Maintenance Manual's chapter on drainage systems, in the Environmental Facility Handbook and the AASHTO Maintenance Manual for Roadways and Bridges.</p> <p>2) Comment on progress of Asset Management System and development of programmatic operations and maintenance plan focused on stormwater.</p>	<p>MassDOT continued to maintain the highway system through catch basin cleaning contracts and performed street sweeping and regular drainage system maintenance.</p> <p>MassDOT is currently in initial stages of developing a programmatic, asset-management based maintenance program.</p>	<p>MassDOT will continue to maintain the highway system through catch basin cleaning contracts, street sweeping, and regular drainage system maintenance.</p> <p>MassDOT is planning to develop the first draft of the programmatic operations and maintenance plan.</p>
6C-2	Maintenance/ Material Storage Yards	Districts	<p>1) MassDOT inspects and audits maintenance and material storage yards using the Facility Environmental Handbook to maintain environmental compliance.</p> <p>2) Post Environmental Management System (EMS) Manual on MassDOT website for public information.</p> <p>3) Post generic Facility Environmental Handbook on website for public information.</p>	<p>MassDOT updated its Facility Environmental Handbook in 2011. This handbook includes information on hazardous waste, hazardous materials, water quality, inspections, and record keeping for MassDOT facilities. The Facility Environmental Handbook is posted on MassDOT's public website. Additionally, in 2015, MassDOT developed updated facility plans for each specific facility.</p> <p>This year no updates were completed for the EMS Manual. The manual outlines the organizational structure, associated responsibilities, and procedures for integrating environmental objectives in roadway and maintenance facility operations and is posted on the internal MassDOT web site.</p> <p>MassDOT's audit checklist associated with the EMS Manual is located in Appendix G.</p>	<p>MassDOT will post any updates to the Facility Environmental Handbook or the EMS Manual to the public website.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6C-3	Maintenance Record and Data Management Work Management System	Environmental/ Highway Operations	1) Develop work management system. 2) Populate program with infrastructure information as available. 3) Implement system and begin to record maintenance activities.	<p>The Maximo Asset and Maintenance Management System is being used in each of MassDOT's Districts as a maintenance work order program.</p> <p>The mobile spatial asset management system, VueWorks, is in use and targets maintenance activities being performed on Closed-Circuit Television (CCTV's), traffic signals, and potholes.</p> <p>Drainage cleaning and repair contracts were issued and included language requiring contractors to report work completed and system condition in a mobile data collection system.</p> <p>The Stormwater Unit is using Esri ArcGIS applications to collect and track inspection and maintenance of stormwater infrastructure (e.g., catch basins, SCMs).</p>	<p>Continue using ArcGIS applications to capture information on catch basin cleaning and SCM inspection and maintenance, in support of the Asset Management Initiative.</p> <p>Continue to implement SCM inspection program and identify appropriate inspectors statewide, train inspectors, and implement program.</p> <p>Through development of the MassDOT programmatic operations and maintenance plan, MassDOT will begin to evaluate the overlaps of ArcGIS applications and Vueworks and assess the optimal platforms to track and implement maintenance at the district level.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6D	Waste Disposal	Districts	<ol style="list-style-type: none"> 1) Street sweeping waste will be reused in appropriate slope stabilization and road work projects in compliance with SOP, when appropriate. 2) Street Sweeping material which cannot be reused will be disposed of at landfills as daily cover. 3) Waste material from drainage structures and SCMs removed during maintenance will be disposed of according to “Reuse and Disposal of Contaminated Soil at Massachusetts Landfills” DEP Policy #COMM-97-001. 	<p>MassDOT and its contractors continue to properly dispose of waste. In some instances, MassDOT beneficially reused street sweeping materials. Material removed is summarized below.</p> <ul style="list-style-type: none"> • District 1 had 1,985 C.Y. of street sweeping materials and approximately 73 C.Y. of drainage structure waste removed. • District 2 had approximately 3,900 C.Y. of street sweeping materials and approximately 405 C.Y. of drainage structure waste removed. • District 3 had approximately 2,498 C.Y. of street sweeping materials removed and 2,270 C.Y. of drainage structure waste removed. • District 4 had 515 C.Y. of drainage structure waste removed. • District 5 had 3,556 C.Y. of street sweeping materials and 1,458 C.Y. of drainage structure waste removed. • District 6 had approximately 1,080 C.Y. of street sweeping materials and approximately 150 C.Y. of drainage structure waste removed. 	<p>MassDOT and its contractors will continue to properly dispose of waste and ensure disposal of street sweepings and catch basin cleanings are in accordance with DEP policy.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6E	Catch Basin Accumulation Project	Environmental/ Maintenance/ Districts	<ol style="list-style-type: none"> 1) Provide summary of progress in annual report. 2) Complete a study of debris accumulation in catch basins. 3) Based on the results of the study, revise the existing cleaning schedule and SOP for catch basin cleaning. 	<p>Measurable goal is complete. The findings of the Catch Basin Accumulation Project do not support the need for revising the existing cleaning schedule and SOP for catch basin cleaning.</p> <p>MassDOT conducted a Sediment Accumulation Pilot Study from March 2021 through March 2022 to determine the suggested frequency for inspection and cleaning of inlet structures within the limits of the I-95 roadway reconstruction project in Needham and Wellesley. Quantitative analysis of sediment accumulation data collected for 90 representative inlet structures, and the resulting trendlines, indicated that routine catch basin inspection and cleaning should occur once every two years to help ensure sumps will not be more than 50% full. Data also indicated that routine drop inlet inspection and cleaning should occur once every four years.</p> <p>MassDOT started another Sediment Accumulation Pilot Study in March 2023 to determine the suggested frequency for inspection and cleaning of inlet structures within the limits of the Route 18 roadway widening project in Abington and Weymouth.</p> <p>This past year MassDOT conducted 7,921 inspections/cleaning on approximately 7,706 unique inlet structures that allowed catch basin cleaning contractors to collect information on work performed, condition, and action required on catch basins.</p>	<p>MassDOT will continue to conduct catch basin inspections using catch basin cleaning contracts and collection information in ArcGIS online.</p> <p>MassDOT will continue with the Route 18 Sediment Accumulation Pilot Study, which includes 45 representative inlet structures within the project limits. The field work portion of the study will be completed in March 2024.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6F	Policy and Program Review	Environmental	MassDOT will continue to evaluate its snow and ice control policies and operational programs, at least biannually, in order to adjust based on data and experience, and to respond to changing conditions.	<p>During the winter season of 2022-2023 MassDOT continued to include Closed Loop Ground Speed Controller Systems on all material spreaders. This allows truck operators to maintain a constant application rate of material on the road without having to adjust the valve opening to conform to the changing speed of the truck which provides a more efficient and consistent application of material.</p> <p>Additionally, MassDOT began developing a small scale trial with salt “pretreated” with liquid magnesium chloride with a corrosion inhibitor. Magnesium Chloride (MgCl₂) has a lower freezing point, is sticky, which helps salt stay on the roadway where it is needed, and unlike endothermic NaCl (sodium chloride), Magnesium Chloride provides exothermic heat to a frigid environment.</p> <p>MassDOT has been evaluating the performance of slurry spreaders and has increased the use of them in environmentally sensitive areas. During Permit Year 20, a total of 98 slurry spreaders were in use. MassDOT has also used pretreated salt in key depots that operate in environmentally sensitive areas as another measure to keep salt on the roads. Over the past 5 years MassDOT has realized approximately 25% reduction in material usage due to updates to the snow and ice policy.</p>	MassDOT evaluated the effectiveness of the pilot studies regarding slurry spreaders and considered to increase its usage in environmentally sensitive areas within the snow and ice control policy. MassDOT will continue to assess the slurry spreaders annually.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6G	Salt Remediation Program	Environmental/Maintenance/ Districts	Continue to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints.	<p>MassDOT continues to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints. Funding has been provided through Interdepartmental Service Agreement (ISA) totaling \$5 million from July 2022 through June 2025.</p> <p>Unlike private well complaints, which are investigated and remediated by MassDOT's Salt Remediation Program, public water supplies concerned about elevated levels of sodium and/or chloride will provide water quality results to MassDOT for evaluating the effectiveness of snow and ice control BMPs in those areas. Based on the evaluation, MassDOT will make operational improvements as needed. An updated version of the Public Well Supply Matrix is included as Appendix F of these public water supply complaints.</p>	Continue Salt Remediation Program and continue ISA funding for the program.
6H	Clean Well Initiative	Environmental	Provide a continued level of funding that will allow MassDOT to complete up to 20 replacement wells per year.	<p>Funding is provided from the ISA from July 2022 to June 2025. MassDOT remediated ten (10) private wells through replacement well installation, water supply treatment, and/or connection to a public water supply. These wells were in following locations:</p> <ul style="list-style-type: none"> Ashby (3) Auburn (1) Hopkinton (1) Palmer (1) Otis (1) Westford (1) Wrentham (2) <p>An updated version of the Public Well Supply Matrix is included as Appendix F of this annual report to summarize the current status of each public well included in the Clean Well Initiative program.</p>	Continue sampling and analysis of private water supply wells and where applicable well rehabilitation, replacement well, water treatment activities and drainage modifications.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6I	Salt/Sand Management and Storage	Highway Operations	<p>MassDOT will continue to replace or repair inadequate salt storage sheds, as well as cover sand piles and/or move them out of wetland buffer zones.</p> <p>Review sheds: Increased capacity of some sheds may be justified because salt storage needs have grown over time and/or because the shed is in a sensitive area and the salt loading operations call for better containment. In sensitive areas, consideration should be given to the use of Gambrel style sheds that provide for the entire operation to be conducted under cover to minimize salt spillage outside of the shed. MassDOT will continue to prioritize the identification and selection of parcels being considered for new salt storage facilities, considering operational needs and the environmental setting.</p> <p>(Continued on next page)</p>	<p>Numerous improvements were undertaken at existing facilities to address damaged salt shed doors, roof trusses, and wall panels to improve the stability of these structures and to reduce the risk of salt accidentally escaping into the environment due to poor management.</p> <p>Repairs are planned on District 4 salt sheds in Rowley, Concord, and Andover (RT-125). Rowley and Andover are having their exterior fabric exoskeletons replaced. Concord is having repairs performed on its existing wooden sheds, District 3's former Framingham salt shed (at RT-9 and RT-126) was on property that was sold. The facility is being built at 1627 Worcester Road (also RT-9). The former locations single shed is being replaced with two new sheds at the new location. District 5's Cohasset salt shed is having its roof replaced summer of 2023.</p>	<p>Continue to train our Snow and Ice personnel to be aware of wetlands in and around our facilities.</p> <p>MassDOT will continue to repair or replace any damaged sheds.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6I (cont'd)			<p>Review Sand Piles: MassDOT will strive to locate sand piles outside wetland buffer zones whenever space allows. However, when this is not possible the department will work towards storing sand piles under cover, especially during the non-winter months. This could be accomplished by storing sand within sheds or, more likely, using a heavy-gauge polyethylene tarp. The tarp could be peeled back once, before winter operations, and then covered again at the end of the season.</p> <p>Personnel: In October 2006, MassDOT hired a Director of Snow & Ice Operations, with over 20 years of experience in winter operations, to improve salt management and supervision of deicing operations.</p>	<p>MassDOT has continued to ensure that sand piles are located outside of wetland resource areas. Sand is stored inside when space allows. Districts 2 and 6 do not use sand. District 4 uses sand in 7 depots and 2 of these have indoor storage. District 1 stores all sand in sheds.</p> <p>District 1 hired 5 highway maintenance workers. District 4 hired 13 highway maintenance workers. District 5 hired 24 additional personnel prior to and during the 2022-2023 winter season to participate in snow and ice operations.</p>	

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6J	Salt Storage Best Management Practices/ Pollution Prevention	Environmental	Continue to implement salt storage in compliance with DEP Guidelines on Deicing Chemical Storage. Continue to follow MassDOT SOP for the Management of Sand and Deicing Chemicals at MassDOT Facilities. Continue to follow Facility Environmental Handbook guidelines at maintenance facilities.	<p>MassDOT continued to include environmental stewardship in the winter operations class. The classes emphasized the needs to follow the current SOPs on slat management and proper material handling. Concepts stressed at trainings included:</p> <ul style="list-style-type: none"> - Prewetting - Pretreating - Environmental Stewardship <p>In addition, MassDOT has repaired leaky liquid magnesium chloride pumps, valves, and hoses statewide.</p>	Continue to inform Snow and Ice personnel of the cause and effects of winter operations on the environment.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6K	Snow and Ice - Equipment Improvements	Environmental / Highway Operations	MassDOT will continue to expand the use of anti-icing as a standard tool for snow and ice control.	<p>Anti-icing consists of applying salt in liquid form to roadways before a snowfall event. This prevents ice from forming on roadways and requires less salt to be used. The anti-icing program expanded with the opening of a salt brine production facility in Sagamore in 2012 and a second brine production facility in Deerfield in 2019.</p> <p>MassDOT has been pretreating the roads with blended brine in advance of storms that promise to arrive as snow and not rain. The blended brine is composed of 85% of saturated NaCl solution (appx. 23.4% NaCl in water) and 15% of our 28% liquid magnesium chloride product. MassDOT's experience proves that roadways that have been pretreated look better for longer at the beginning of a storm and respond better to subsequent treatments. Pretreatment is a best management practice that was instituted to save salt (and money) overall. District 3 is in the early stages of developing a brine making program in its Sterling, MA depot. The plant would be MassDOT's third, following the plants built in Sagamore and Deerfield.</p> <p>The use of anti-icing has increased. MassDOT increased the number of anti-icing equipment and the hours the equipment is utilized. Most of the depots across the Commonwealth have access to direct liquid trucks. Interstates are the primary roads targeted followed by all others.</p>	<p>MassDOT will work on a method of quantifying anti-icing activities versus pre-wetting activities.</p> <p>MassDOT will continue to use blended brine as a form of pretreatment.</p>

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6K (cont'd)				<p>MassDOT has equipped state-owned spreaders in District 3 and hired equipment in select environmentally sensitive areas with Global Positioning System Automatic Vehicle Locator (GPS-AVL) technology, which allows material spreaders to be reflected on a map and material distribution parameters can be viewed in real-time and after an event to examine if practices are consistent with MassDOT directives and protocols. This program highlights that all contractors are responsible for material conservation and are held accountable as business entities and individuals for responsible use of anti-icing materials. MassDOT is expanding use of this technology to its own fleet. Starting this year, MassDOT will employ this technology, starting with areas that have environmental challenges involving roadway deicer's legacy ions (Na⁺ and Cl⁻).</p> <p>In addition, MassDOT is utilizing a greater number of tankers and slurry spreaders statewide. Slurry spreaders provide a greater saturation level for dry salt to be applied in a manner that will decrease the potential for the salt to be scattered to the side of the road by a material spreader's spinner and subsequent passes by vehicular traffic.</p>	

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6L	Snow and Ice - Enhanced Weather Forecasting Information	Environmental / Highway Operations	Continue to provide sufficient funding to use weather forecasting contractor to provide up-to-date and local weather information during snow and ice season.	MassDOT meets with the meteorological partner (DTN) 8 times per year. Additionally, MassDOT receives forecasts from them 4 times daily and has access to an online weather platform and phone-based application to keep tabs on any expected weather. MassDOT also has a hotline phone number to get in touch with a staff meteorologist if incoming weather needs to be discussed or a question is raised on a recent forecast. The weather partner, DTN allows MassDOT to zero-in on the appropriate times to summon contracted equipment to maintenance depots.	MassDOT will continue to investigate pavement temperature forecasting.
6M	Snow and Ice - Road Weather Information System (RWIS)	Environmental / Highway Operations	MassDOT will ensure that these stations will be maintained so as to remain fully functional.	MassDOT currently maintains 55 fixed-location sites and 4 trailer-mounted relocatable ones. Additionally, the program has been enhanced with upgraded systems statewide and funding is in place for annual maintenance. This permit year, MassDOT added 7 new fixed Road Weather Information Systems (RWIS). The mobile RWIS program has expanded to about 30 units. The mobile road weather information systems are for MassDOT's roadway supervisors for them to have real time knowledge of travel conditions on any roadway in the Commonwealth.	MassDOT will plan several new non-invasive RWIS sites as well as install some battery powered in-road and overhead sensors in important locations which will allow MassDOT to monitor them for weather-related travel conditions.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6N	Snow and Ice Generic Environmental Impact Report (GEIR) - Alternative Technologies	Environmental / Highway Operations	MassDOT will continue to maximize the use of Premix and liquid calcium chloride, as alternative deicers, to reduce the quantity of granular sodium chloride, and should closely monitor reduced salt zones during storms to ensure the proper timing of salt applications and to minimize the potential for overuse of deicing chemicals.	<p>MassDOT has increased the use of spreaders statewide with GPS AVL technology. In total there are 80 spreaders in areas that have been marked as areas to use less sodium chloride due to their status as sensitive watershed.</p> <p>MassDOT is holding steady at 55 fixed-location RWIS sites. MassDOT has non-invasive RWIS sensors in Sturbridge, Worcester, Auburn, Framingham, Cheshire, Blandford Service Area, New Bedford, Sagamore, Westport, Bedford, Easthampton, Bernardston, I-91, and Route 116 Quincy, Newton, and Canton. They assist in filling in the road weather information gaps in between the fixed location stations.</p> <p>The use of anti-icing techniques have significantly reduced the amount of deicer required to keep the roads reasonably safe. Recently, MassDOT has experimented with a limited amount of pretreated salt that arrives to the salt sheds already precoated with magnesium chloride. It is a darker green color which attracts UV rays and warms the roadway.</p>	MassDOT will continue to reduce the quantity of granular sodium chloride, develop operation BMPs to reduce the use of sodium chloride, and closely monitor reduced salt zones during storms to ensure the proper timing of salt applications and to minimize the potential for overuse of deicing chemicals.

6O	Snow and Ice GEIR - Research	Operations	<p>MassDOT has joined Clear Roads program and will continue to explore moving forward on other projects. Summarize research performed.</p>	<p>Massachusetts has continued to commit resources towards Clear Roads and MassDOT continues to be an active member in the Clear Roads program, including participation in Peer Summit Meetings and phone-based Regional Roundtables with approximately 35 other cold-weather states. Clear Roads activities are documented on their website www.Clearroads.org. Research continues to assist MassDOT by bringing the most current practices to Operations. MassDOT is co-champion of a research project that is developing a GIS-based mapping tool that allows agencies to gauge the environmental sensitivity of any and all of its snow plow routes. The tool ingests map layers of interest (such as topography) to certain agencies, and highlights routes and portions of routes where greater care needs to be taken when dispensing deicing chemicals, so as not to harm environmentally sensitive areas, which include, but are not limited to: drinking water wells (i.e., Zone 1 and Zone 2) and reservoirs, agricultural/farming areas, lakes, ecological resources, etc.</p> <p>During this past permit year, MassDOT implemented a grip-based salt spreader program for the first time. A mobile RWIS (Vaisala MD-30) is connected to a MassDOT salt spreader's spreader controller. The MD-30 sits behind the plow blade at the front of the vehicle. After the plow blade scrapes, the MD-30's perceived roadway grip level (unitless) is fed to the vehicle's salt spreader controller, that interprets that grip level and distributes a corresponding salting rate (lb/lane-mile) at the vehicle's rear. Additionally, the salting vehicle and it's spreader controller are connected to GPS, which allows us to look-in on what the vehicle's location, speed, spreading rate are at any moment.</p>	<p>MassDOT will continue to support, participate, and use the research and benefits of collaboration with Clear Roads.</p> <p>MassDOT plans to expand the grip-based salt spreader program to an additional vehicle next season.</p> <p>MassDOT plans to work on a new project that will study how a couple of adjacent, different pavement overlays (Open grade friction course, or OGFC) and Hot mix asphalt (HMA) respond to a similar salting regimen. The pavement study area has been used previously to facilitate water studies. There are 2 weather stations a few hundred feet apart (one on each pavement type) which are outfitted with non-invasive road weather monitoring sensors. MassDOT plans to add invasive in-road sensors that can determine the theoretical freezing temperature of the deicing solution sitting atop them. Also, the vehicles that treat the roadway here (I-95 SB in Needham) will have GPS with salt tracking, MassDOT will geofence the study area to capture/record all salting inputs.</p>
----	---------------------------------	------------	--	---	---

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/2024
6P	MassDOT Research Needs Program	Environmental/ Construction	Continue funding the MassDOT Research Needs Program.	MassDOT continued funding the MassDOT Research Needs Program.	MassDOT will participate in research projects, as applicable.
Addn.	Open Graded Friction Course	Environmental	Complete Study on Open Graded Friction Course benefits on stormwater treatment	MassDOT, along with USGS, is conducting a study on the water quality benefits of Open Graded Friction Course (OGFC) pavement. The goal of the study is to obtain stormwater treatment credit from MassDEP for use of this pavement material along a section of I-95 in Needham and Wellesley. Stormwater sampling along I-95 in Needham started in October 2018 and finished in Fall 2021. The draft report was completed in March 2023.	The final report from USGS is scheduled to be completed by September 2023.

7. Impaired Waters

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
7A	Wetland Protection Act (WPA) Compliance	Environmental	<ol style="list-style-type: none"> 1) All MassDOT projects will comply with the WPA and Massachusetts Endangered Species Act (MESA). 2) When potential impacts are identified, MassDOT will work with the appropriate agencies to design the project to minimize the impacts. 	Continued to comply with requirements of MESA and the WPA.	Continue to comply with requirements of MESA and the WPA.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
7B	401 Water Quality Certification	Environmental	Massachusetts's 401 Water Quality certification requirements, which include review of the project by MA Natural Heritage program and US Fish and Wildlife if endangered species habitat is mapped in the project vicinity, will be complied with whenever they are applicable.	Continue to comply with MA 401 Water Quality Certification Regulations.	Continue to comply with MA 401 Water Quality Certification Regulations.
7C	CE Checklist	Environmental	Complete a Categorical Exclusion Checklist for all MassDOT projects that utilize federal funds.	Categorical Exclusion (CE) checklists were completed and approved for all federally aided projects advertised for construction by MassDOT. All documentation supporting MassDOT's determination of a project meeting the definition of a Categorical Exclusion is on file with the Environmental Services Section at MassDOT Highway Division.	Continue to approve Categorical Exclusion Checklists in support of MassDOT Highway Division's Construction Advertising Program.
7D	Water Quality Data Form (WQDF)	Environmental/ Construction	See BMP 1J.	See BMP 1J.	See BMP 1J.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
7E	TMDL Update	Environmental	<ol style="list-style-type: none"> 1. The WQDF will be updated annually to reflect the TMDL reports that have been finalized in the previous permit year. 2. MassDOT will review newly finalized TMDLs to determine if new procedures are needed to address programmatic requirements in the TMDL 	MassDOT has developed a more programmatic method for addressing TMDLs by making sure projects provide appropriate treatment by flagging projects within TMDL watersheds when a designer submits the 25% design WQDF and requiring submittal of treatment information and review by the Stormwater Unit. MassDOT reviewed DEP's website and made sure that the WQDF TMDL list and shapefile is up to date. MassDOT also reviewed the newly issued TMDLs to determine if any additional programmatic tasks were needed to address the TMDL and determined that the current program provides the needed coverage.	MassDOT will review newly finalized TMDLs and update the WQDF to reflect the changes including the datalayer. MassDOT will work with DEP and EPA on new TMDLs to provide input prior to finalizing whenever possible.
7F – 7Q Revised	TMDL Specific Recommendations	See NOI	See SWMP	With the latest 2016 MS4 permit providing more recent and focused requirements for stormwater contributions in TMDL watersheds, MassDOT is instead incorporating TMDL recommendations (which are part of the 2016 permit) into projects versus the MassDOT-specific recommendations identified in previous reports. MassDOT has incorporated TMDL guidance into its revised WQDF released in PY20.	MassDOT will continue to integrate TMDL guidance into its WQDF to address TMDL pollutant reduction goals. MassDOT is reviewing these BMPs as part of the next SWMP revision.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
7R	TMDL Watershed Review	Environmental	<p>To address requirements of the EPA enforcement letter MassDOT will:</p> <ol style="list-style-type: none"> 1. Assess all TMDL waters (total of 209 covered by final TMDLs as of April 30, 2010) listed in Appendix L-1 of the July 22, 2010 SWMP using the process described in BMP 7R. The assessments will be completed over five years, beginning June 8, 2010, and 20% will be assessed each year. 2. Assess at least 25 water bodies (both TMDL and non-TMDL waters) within the first quarter of the Impaired Water Program (BMPs 7U and 7R). 3. Submit quarterly progress report to EPA during the first year of the Impaired Waters Program (BMP 7U and BMP 7R) and semi-annually thereafter until Appendix L-1 TMDL watersheds are addressed. 	<p>Tasks completed in Permit Year 8. June 8, 2015 Final Submittal to court provided final documented compliance. No action this year because all measurable goals have been met.</p>	No action required.
7S	Salt Remediation Program	Environmental	<p>Continue to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints.</p>	<p>Overall, ISA Salt Remediation Program budget is \$1.7 million from July 2022 through June 2025. We secured separate funding in the amount of more than \$1.5M for waterline extensions and service connections in Wrentham.</p>	Continue to address new and existing salt complaints.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
7T	Review of Specific Sites for Water Quality Exceedances in Response to CLF et al. Lawsuit	Environmental	<ol style="list-style-type: none"> 1. Analyze each of the three sites identified in the CLF lawsuit (Charles River crossings in Bellingham and Milford; and North Nashua River crossing in Lancaster). Develop summary report with modeling methodology and summary of results. 2. For the sites which are determined to contribute to the exceedance of water quality at the stream crossing, construct SCMs to address MassDOT related exceedances. 3. Submit a remedial plan to the court. 	Tasks completed in Permit Year 8. June 8, 2015 Final Submittal to court provided final documented compliance.	No further action required.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 20	Planned Activities – 2023/ 2024
7U	Water Quality Impaired Waters Assessment and Mitigation Plan	Environmental	<ol style="list-style-type: none"> 1) Assess all water listed in Appendix L-1 of the SWMP (revised as of July 22, 2010) using the process described in this BMP. 2) Assess at least 25 water bodies (both TMDL and non-TMDL waters) within the first quarter of the Impaired Water Program (BMPs 7U and 7R). 3) Submit quarterly progress reports to EPA during the first year of the Impaired Waters Program and semi-annually thereafter. 	1-4: MassDOT submitted assessments to EPA as part of its semi-annual submittals for all waters listed in Appendix L-1 as of its final submission on June 8, 2015.	Future activities of the Impaired Waters Program are summarized in Appendix C. MassDOT will continue to develop designs for SCMs to address impaired waters under the Impaired Waters Program.
8A	Cultural Resources Review	Cultural Resources Unit (CRU)	Review all projects for impacts to historic and archaeological properties at the 25% design phase. If a potential impact is found, CRU staff works with the designer (MassDOT or consultant) to avoid, minimize, or mitigate adverse effects under Section 106 of the National Historic Preservation Act of 1966 or applicable state law.	All projects listed in the Construction Advertisement Program for the reporting year were reviewed for impacts to historic properties or archaeological resources. None of the projects reviewed had stormwater impacts to significant archaeological or historic resources. Thus, none of these projects required any SCM design alterations based on cultural resources concerns.	The Cultural Resources Unit will continue to review projects for any stormwater impacts to historic resources at the 25% design stage.
Addn.	Programmed Projects Initiative	Environmental/ Consultant	Include stormwater controls in programmed projects that drain to impaired water bodies. Document treatment in WQDF.	MassDOT continues to implement SCMs in programmed projects that drain to an impaired water body. The WQDF documented 56 proposed structural SCMs this permit year. Refer to Appendix C for more detail on the Programmed Project Initiative.	MassDOT will continue the Programmed Projects Initiative.

Part IV. Summary of Information Collected and Analyzed

All information collected and analyzed this year is summarized in the proceeding tables and narrative.

Part V. Program Outputs & Accomplishments (OPTIONAL)

MassDOT's accomplishments during this permit year are summarized in Part 1- 4 of this annual report. Additional BMPs that are considered above-and-beyond initiatives and have short-term goals have been added to the matrix above with "Additional" notation.

List of Appendices

Appendix A: IDDE Status Table

Appendix B: Notice of Violation (NOV) Letter

Appendix C: Impaired Waters Program – Summary of NPDES Permit Year 20

Appendix D: Design Public Hearings Table

Appendix E: Active MassDOT Construction NOIs in Permit Year 20

Appendix F: Public Well Supply Matrix and Salt Remediation Program

Appendix G: Environmental Compliance Audit Checklist

Appendix H: Litter Program Summary

Appendix A: IDDE Status Table

IDDE Status Table

Original Date Issued Identified	Date of Most Recent Field Visit/ Sampling	Address	Source Identification	Sampling Results	Description of Potential Issue and Background	Description of 2022 - 2023 Actions	Investigation Status	Next Steps for 2023 - 2024	District
2015	9/16/2022	164 Boston Rd, Groton, MA	Visual Inspection	N/A	Maintenance staff identified a flowing concrete pipe, located directly outside Johnson's Restaurant and Dairy Bar. The pipe discharges to a MassDOT inlet structure along Route 225. During a site visit performed on 4/7/21, MassDOT's consultant (Tetra Tech) confirmed the location of the concrete pipe. MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found.	On 9/16/2022, MassDOT's consultant CEI performed a follow-up site investigation and dry weather screening of the suspected illicit connection. CEI located the concrete pipe but there was no dry weather flow so a sample could not be secured.	Investigation On-Going	MassDOT will use closed-circuit television (CCTV) to video the pipe and identify the source of the pipe. Based on the CCTV results, MassDOT will potentially send a Notice of Violation (NOV) letter requiring the property owner to plug the connection or file for a Drainage Tie-In permit. This should be coordinated with the ongoing investigation of the clay pipe also potentially coming from the same property (see below).	3
2021	9/16/2022	Near 164 Boston Rd, Groton, MA	Visual Inspection	High surfactants (9,999 mg/L) and significant colony forming units (CFU) of E. Coli was detected (2,420 CFU/100ml)	During site visit on 4/7/21 by MassDOT's consultant (Tetra Tech), a potential illicit connection was identified discharging to MassDOT's drainage system. A six-inch clay pipe with discolored flow and strong odor was found at the inlet structure located near the northeast corner of the Johnson's Restaurant and Dairy Bar parking lot. MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found.	On 9/16/2022, MassDOT's consultant CEI performed a follow-up site investigation and dry weather screening of the suspected illicit connection. CEI documented that it is not clear where the source of the clay pipe originates but that it is on the very edge of the 164 Boston Road and may be receiving flow from upgradient adjacent properties along Skyfields Drive. There was intermittent dry weather flow, approximately 0.1-inch in depth. Flow was relatively clear. CEI secured a sample and results indicated very high surfactants and bacteria. There was white/orange benthic growth on the pipe. There was an easily detected sewage/rancid odor from the catch basin. The water in the catch basin sump was very cloudy with white foam.	Investigation On-Going	MassDOT will CCTV the pipe to identify the source of flow. Based on the CCTV results, MassDOT will send an NOV letter to the property owner, and MassDOT will potentially work with the Town of Groton DPW and/or Board of Health to support the property owner in the removal/treatment of the flow.	3
2016	10/21/2022	746 Bedford St, East Bridgewater, MA	Visual Inspection	N/A	MassDOT consultant (Jacobs) performed a site visit on 4/20/21 and observed a hose from the house discharging into the MassDOT catch basin. Intermittent flow, that was both odorless and colorless, was observed discharging through the hose and into the catch basin. It appeared the hose might be coming from the basement, indicating the possibility of a sump pump connection.	On 10/21/2022, CEI performed a follow-up site investigation and dry weather screening of the suspected illicit connection. The hose had been removed and there was no sign of an illicit connection into the MassDOT drainage system. CEI documented these findings through an inspection form.	Closed	No further action required.	5
2016	10/21/2022	10 Jessica Ln, Weymouth, MA	Construction Observation	N/A	MassDOT identified a connection to the MassDOT drainage system from an adjacent property. MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found. MassDOT sent a letter in 2019 informing the property owner to plug the connection.	On 10/21/2022, CEI performed a follow-up site investigation and dry weather screening of the suspected illicit connection. No pipe was observed entering the MassDOT catch basin, and no signs of illicit discharges were observed. Route 18 was recently reconstructed and the design plans for that project show that the former 4-inch Polyvinyl Chloride (PVC) connection to the MassDOT inlet was plugged and abandoned as part of that work. The old catch basin was removed and a new catch basin was installed at the new curb line.	Closed	No further action required.	6

Original Date Issued Identified	Date of Most Recent Field Visit/ Sampling	Address	Source Identification	Sampling Results	Description of Potential Issue and Background	Description of 2022 - 2023 Actions	Investigation Status	Next Steps for 2023 - 2024	District
2020	9/16/2022	60 Main St, Boylston, MA	Maintenance Observation	N/A	MassDOT observed a potential illicit connection at 60 Main Street tied into a MassDOT drain inlet. The catch basin in front of 63 Main Street has a 4-inch PVC pipe entering from that location and the roadway has signs of trenching. MassDOT sent a Notice of Violation letter to the property owner on 12/28/20. No communication has been received from the owner.	On 9/16/2022, CEI performed a follow-up site investigation. The 4-inch pipe was located but there was no dry weather flow, so a sample was not taken. There was minor green and black staining on the interior of the PVC pipe (suspected to be moss/mold/mildew growth). To address the discharge, the homeowner had installed a "NDS pop-up drain emitter" on the 4-inch pipe to intercept the flow before the MassDOT catch basin.	Investigation On-going	MassDOT will perform a site visit during wet weather to observe drainage patterns from the NDS pop up drainage emitter and determine if flow drains to the MassDOT drainage system (either through overland flow to catch basins or if flow bypasses the drainage emitter and the PVC pipe is still discharging directly to the catch basin structure). If flow drains to the MassDOT drainage system, MassDOT may take a sample during the wet weather site visit to determine composition of the water. Depending on site visit observations and results, MassDOT may request the property owner to file for a drainage tie-in permit.	3
2020	6/9/2021	North Main St (Route 28), Andover, MA	Maintenance Observation	On 10/15/20, sampling results did not indicate likely sewer input, however the high surfactants and chlorine combined with the odor suggests a non-stormwater discharge. On 6/9/2021, sampling results indicated free chlorine of 0.04 ppm for the flow around the outfall pipe and 0.02 ppm for the flow inside the outfall pipe, which are considered low readings and do not exceed thresholds. The 6/9/2021 sampling did not include results for surfactants.	The Town of Andover alerted MassDOT of a potential illicit connection on 10/5/20. MassDOT's consultant (VHB) performed a site visit on 10/15/20 and sampled the dry weather flow (which was rust-colored and had an odor). The crew reviewed the upstream end of the culvert and found it to be dry, indicating a potential illicit connection/discharge or infiltration and inflow (I&I) into the culvert at some point downstream of the inspection point. VHB recommended the Town of Andover perform a CCTV inspection of the sewer pipes in the vicinity of the outfall. MassDOT forwarded VHB's memo to the Andover Conservation Commission and followed-up with a voicemail and email. On 11/18/2020, the Town of Andover sent a push camera up the outlet end of the culvert, and indicated that clear water was entering the pipe approximately 10 feet upstream. A sample was not taken. The Town of Andover observed flow seeping out of the steep gradient and base of the hill around the culvert and concluded that the source of the seepage into the pipe was groundwater I&I.	MassDOT's consultant (CEI) reached out to the Town of Andover and found out that the Town had performed a follow-up investigation on 6/9/2021. The Town conducted dry weather screening/sampling of the MassDOT outfall pipe. The flow was clear and odorless, and sample results indicated low chlorine (see sampling results column). CEI and the Town of Andover concluded that since the 10/15/20 sample was from rusty colored flow, the chlorine levels were likely erroneously high and that the dry weather flow is due to groundwater seepage into the pipe.	Closed	No further action required.	4

Original Date Issued Identified	Date of Most Recent Field Visit/ Sampling	Address	Source Identification	Sampling Results	Description of Potential Issue and Background	Description of 2022 - 2023 Actions	Investigation Status	Next Steps for 2023 - 2024	District
2021	9/16/2022	1170 Pleasant St, Worcester, MA	Maintenance Observation	N/A	MassDOT maintenance staff identified a potential discharge from adjacent residential property's basement to a MassDOT drain. MassDOT performed a site visit in March 2021 and observed a partially buried, corrugated HDPE pipe from the home draining towards a shallow, rectangular, concrete structure.	On 9/16/2022, CEI performed a follow-up site investigation and observed a flexible 4-inch corrugated plastic drain pipe in the grass coming from the house which was connected to the shallow, rectangular, concrete structure within the grass area adjacent to sidewalk. The 4-inch corrugated plastic pipe appeared to connect to a white PVC pipe before entering the concrete structure. There was no dry weather flow from the inlet pipe at that time. A 4-inch PVC outlet pipe was observed exiting the concrete structure, although the downgradient end of the PVC pipe was not located. The ownership of the concrete structure has not been confirmed, and the investigation on 9/16/2022 was not able to determine if the PVC pipe connects to the MassDOT drainage system. The PVC outlet pipe from the concrete structure appears to drain under the adjacent paved driveway area, in the direction of another similar grated concrete structure at another property downgradient.	Investigation On-Going	MassDOT will perform a review of available drainage plansets of the area to identify if the concrete structure is owned by MassDOT or another entity. If the structure is owned by another entity, then MassDOT will follow up with another field visit to investigate the downgradient stormwater system on Pleasant Street to determine if the PVC pipe connects to the MassDOT drainage system on Pleasant Street. If the concrete structure is owned by MassDOT, MassDOT will send an NOV letter requiring the property owner to plug the connection or file for a Drainage Tie-In permit	3
2021	9/16/2022	90 Sterling St (Route 12), West Boylston, MA	Maintenance Observation	N/A	Potential illicit connection identified by MassDOT maintenance and reported. MassDOT Stormwater Unit performed a site visit in March 2021 and was unable to locate the catch basin where the potential illicit connection was reported.	On 9/16/2022, CEI performed a follow-up site investigation of the suspected illicit connection. The MassDOT catch basin was identified (structure SWIM0161102) and no potential illicit connection was found in the MassDOT catch basin	Closed	No further action required.	3
2016	4/11/2017	1780 Main Street, West Barnstable, MA	Visual Inspection	In April 2017, MassDOT sampling results at culvert inlet draining into MassDOT system exceeded the MS4 permit's sewer input indicator criteria for ammonia, surfactants and detectable levels of chlorine indicating the need for further investigation.	In October 2016, a potential illicit discharge was brought to MassDOT's attention by the Barnstable Town Council. The Town Council shared IDDE sampling results submitted by the homeowner at 1780 Main Street which had been taken from two locations along a downstream trench which receives flows from a MassDOT-owned outfall adjacent to 1780 Main Street. The results indicated elevated levels of E. coli. To investigate this report, MassDOT hired Stacy DePasquale Engineering, Inc (SDE), through a VHB contract with MassDOT, to complete a catchment investigation to the MassDOT outfall in order to identify potential sources of the dry weather flow. The investigation determined that there was no dry weather flow from the MassDOT drainage system and that groundwater breakout to a culvert inlet located in front of 2391 Iyannough Road was the likely source for dry weather inflow, although the sampling results of the dry weather flow exceeded sewer input criteria. MassDOT contacted the Town of Barnstable through email on June 12, 2017 to alert them of the dry weather flow which would need to be investigated as part of the town's IDDE program. The Town of Barnstable Health Division completed an investigation of the contributing property and determined that there was no evidence of sewer or wastewater inputs into the system. The investigation was then closed by the Town of Barnstable Health Division and the conclusions were shared with MassDOT via email communication. The investigation results were summarized in MassDOT's Permit Year 15 MS4 Annual Report.	In August 2022, MassDOT reviewed all progress on this investigation and prepared a summary memo documenting all actions to date. While the investigation results concluded that there were no illicit discharges, it is unclear if the MassDOT and Town of Barnstable IDDE investigation results were shared with the concerned homeowner. Therefore, MassDOT hired SDE (October 2022), through VHB's contract with MassDOT, to repeat the dry weather sampling and collaboratively work with the Town of Barnstable to rule out contribution from adjacent landowners, share the results with the homeowner, and report the results in future MS4 annual reports. VHB and SDE prepared an investigation plan and discussed the plan with the Town of Barnstable (November 2022). SDE/VHB have been actively monitoring the weather since the investigation plan was finalized to identify a timeframe for the necessary dry weather window, including time for potential sandbagging to identify intermittent flows. Winter and spring storms did not provide a dry weather opportunity as of the end of March, but SDE/VHB continues to monitor the weather.	Investigation On-Going	SDE will continue to actively monitor the weather conditions to identify an appropriate weather window to complete the sampling week. Sampling results will be summarized in a memo and discussed with the Town of Barnstable. Barnstable and MassDOT will determine if additional steps are necessary to rule out illicit discharges to the system. The results will be shared with the homeowner and reported in the next annual report.	5

Original Date Issued Identified	Date of Most Recent Field Visit/ Sampling	Address	Source Identification	Sampling Results	Description of Potential Issue and Background	Description of 2022 - 2023 Actions	Investigation Status	Next Steps for 2023 - 2024	District
2021	6/1/2021	Mystic Rd, Everett, MA	Visual Inspection	Exceeds threshold for ammonia, chlorine, and surfactants which indicates a likely sewer input.	Potential illicit connection identified by DCR and reported to MassDOT Stormwater Unit. The potential illicit connection was identified during a dry weather IDDE survey by DCR at an outfall where the flow exceeded sewer input thresholds for ammonia, chlorine, and surfactants. MassDOT hired consultant (Tetra Tech) to investigate and they performed a site visit on 5/24/21 and performed research on roadway ownership. Tetra Tech's research on roadway ownership indicated that DCR owns the roadway (based on 1999 plans); however, after further investigation, they verified that the outfall and drainage system ownership was accepted by MassDOT. Tetra Tech performed two additional dry weather surveys on 10/1/21 and 10/6/21 where no flow was observed. On 10/26/21, Tetra Tech performed a wet weather survey and a sample was taken at the manhole directly upstream of the outfall which exceeded e. coli and enterococcus thresholds but did not indicate likely sewer input based on MS4 permit requirements.	MassDOT's consultant (Tetra Tech) performed an IDDE investigation of the drainage system in Santilli Circle during wet weather with the goal to rule out any potential sewer input indicated by the initial sampling results by DCR. The investigation was performed on 3/24/22 and results were summarized in a memo on 7/29/22. The results of the wet weather investigation indicated high bacteria levels at all 7 manholes sampled, but none of the results met the MS4 permit requirement for likely sewer input.	Investigation On-Going	MassDOT will review results further and develop a plan to investigate the high bacteria levels indicated during the wet weather investigation in 2022 (e.g., cctv).	4
2012	4/20/2021	469 Taunton Avenue, Seekonk, MA	Visual Inspection	N/A	A potential illicit connection to the MassDOT drainage system on Taunton Ave (Route 44) was identified during an impaired waters assessment site visit. MassDOT consultant (Jacobs) performed a site visit on 4/20/21. One catch basin located on Taunton Ave was opened to reveal a PVC pipe connected into the structure coming from the direction of 469 Taunton Ave. The pipe wasn't flowing when it was investigated, but there appeared to be remnants of grease in the pipe. Jacobs also observed a sheen on top of the water in the structure, as well as some debris floating in it.	The district sent an NOV letter on August 18, 2022 to the property owner of 469 Taunton Ave requiring them to plug the connection or file for a Drainage Tie-In permit.	Investigation On-Going; MassDOT requested Tie-In Permit application	MassDOT will follow up with the property owner to set up a meeting to further discuss the illicit connection and next steps to resolve the issue.	5
2017	4/7/2021	1091 Massachusetts Ave, Lunenburg, MA	Visual Inspection	N/A	MassDOT identified a potential illicit discharge due to flow onto the roadway causing icing conditions on Route 2A. MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found. MassDOT's consultant (Tetra Tech) performed a site visit on 04/7/2021 and identified the discharge as a two-inch plastic pipe found in the stone wall located on the eastern edge of the residence. The field crews did not identify any visual indicators of illicit flow and the pipes were not flowing at the time of the site visit. Therefore, MassDOT determined this connection likely only discharges stormwater and will confirm this assumption by requiring the home owner to apply for a Drainage Tie-In permit which requires documenting the source of the flow.	The district sent an NOV letter in Summer 2022 to the property owner based on lack of Tie-In permit and specified requirements for a Tie-in Permit which will document the connection as a stormwater discharge. The owner called MassDOT and discussed the drainage pipe he has running to the exterior of his property. The owner's description did not match the report from Tetra Tech so MassDOT visited the property to further discuss the potential illicit connection and discuss next steps. He said the pipe was originally connected to a sump pump in the owner's basement but now pumps into a drywall in his yard. The owner stated the pipe is no longer in use so it will be removed.	Investigation On-Going; MassDOT requested Tie-In Permit application	MassDOT will follow up with the owner to determine that the connection has been removed as previously discussed.	3

Original Date Issued Identified	Date of Most Recent Field Visit/ Sampling	Address	Source Identification	Sampling Results	Description of Potential Issue and Background	Description of 2022 - 2023 Actions	Investigation Status	Next Steps for 2023 - 2024	District
2021	4/7/2021	1091 Massachusetts Ave, Lunenburg, MA	Visual Inspection	N/A	During the site visit on 4/7/2021 by MassDOT's consultant (Tetra Tech), (see row above), a second potential illicit discharge was found which consisted of a 2-inch plastic pipe in the stone wall located to the west of the residence. The pipe was determined to be the discharge from the residence's inground swimming pool pump system. MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found. If the discharge is only dechlorinated stormwater, then the discharges is allowed per the MS4 permit. MassDOT will confirm this assumption by requiring the home owner to apply for a Drainage Tie-In permit which requires documenting the source of the flow.	The district sent an NOV letter in Summer 2022 to the property owner based on lack of tie-in permit and specified requirements for a Tie-in Permit which will document the connection as a stormwater discharge. The owner called MassDOT and discussed the drainage pipe he has running to the exterior of his property. He said the pool side drains into the grass on his yard. The owner's description did not match the report from Tetra Tech so MassDOT visited the property to further discuss the potential illicit connection and discuss next steps. MassDOT determined that the owner must remove the entire portion of the pipe from the fence to the SHLO (the stone wall). He stated that he will dechlorinate the water on his property behind his fence before disposing of the water into his bushes.	Investigation On-Going; MassDOT requested Tie-In Permit application	MassDOT will follow up with the owner to determine that the connection has been removed as previously discussed.	3
2011	4/7/2021	454 Patriots Rd, Templeton, MA	Maintenance Observation	N/A	District 2 observed a small pipe exiting this property during a maintenance visit. MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found. MassDOT's consultant (Tetra Tech) performed a site visit on 4/7/2021 and observed no visual indicators of illicit flow and the pipes did not have flow. Therefore, MassDOT determined this connection likely only discharges stormwater and will confirm this assumption by requiring the home owner to apply for a Drainage Tie-In permit which requires documenting the source of the flow.	No actions taken this year.	MassDOT requesting Tie-in Permit application - Document Only Stormwater Flow	The district will send an NOV letter in Spring 2023 to the property owner based on lack of Tie-In permit and specify requirements for a Tie-in Permit which will document the connection as a stormwater discharge.	2
2017	4/21/2021	210 Mechanic St, Bellingham, MA	Maintenance Observation	N/A	MassDOT identified a potential illicit connection on Route 140 from the parking lot at 210 Mechanic St. MassDOT's consultant (BSC Group) performed a site visit on 4/21/21 and reviewed two catch basins on Route 140 directly connected to the 210 Mechanic Street parking lot. MassDOT had recently expanded the road and the catch basins in the parking lot were connected to MassDOT's stormwater system. There were no signs of illicit connections or discharges. MassDOT determined this connection is only stormwater.	MassDOT reviewed drainage plansets from the 1999 expansion of Route 140 to determine timeframe for when the catch basins were connected in to the MassDOT drainage system. The plans do not show the two catch basins from the parking lot as part of the project, however, the plans are not as-builts, and the catch basins were most likely connected during the expansion of Route 140, consistent with the owner's information.	Closed	MassDOT will document the connections from the catch basins in the parking lot to the MassDOT drainage system as tie-ins since the work was performed through a MassDOT project. The catch basins provide only stormwater to the MassDOT drainage system.	3
2017	4/21/2021	117 Putnam Hill Rd, Sutton, MA	Maintenance Observation	N/A	MassDOT identified a possible illicit connection when investigating icing conditions on the road and noticed a pipe that discharges into a small steel culvert that is directed towards a MassDOT roadway (Putnam Hill Road). MassDOT reviewed the Non-Vehicular Access Permit Application records for authorized connections and no permit was found. Based on a site visit by MassDOT's consultant (BSC Group) on 4/21/21, no visual indicators of illicit flow were observed and pipes were not flowing. Therefore, MassDOT determined this connection likely only discharges stormwater and will confirm this assumption by requiring the home owner to apply for a Drainage Tie-In permit which requires documenting the source of the flow.	MassDOT confirmed ownership of the potential illicit connection.	MassDOT requesting Tie-in Permit application - Document Only Stormwater Flow	The district will send an NOV letter to property owner based on lack of Tie-In permit and specify requirements for a Tie-in Permit which will document the connection as a stormwater discharge.	3

Appendix B: Notice of Violation (NOV) Letter

[Letterhead]

[Date]

CERTIFIED MAIL – RETURN RECEIPT REQUESTED # _____

[Contact's Name]

[City/Town or Business Name, If Applicable]

[Address]

[Town/City, State, Zip Code]

Notice of Violation

Re: Illicit and/or Unauthorized Drainage Connection or Discharge to MassDOT Drainage System

Located at _____

Dear _____:

The purpose of this Notice of Violation (NOV) is to inform you, as owner of the above-referenced property, of a suspected connection or discharge to the Massachusetts Department of Transportation's Highway Division (MassDOT) drainage system without a properly issued Non-vehicular Access Permit (tie-in permit).

[Description of the site (several sentences), along with details of the suspect connection.]

This is in violation of G.L. c. 81, § 21, regulations found at 720 CMR 13.00, and Standard Operating Procedure No. HMD-02-2-000 (a copy of which is enclosed). Be aware that MassDOT strictly prohibits illicit and/or unauthorized drainage connections and discharges. Any such connection or discharge must be either permitted by MassDOT or immediately disconnected/sealed.

You have ninety (90) days from the receipt of this notification to contact the person listed below to indicate whether: (1) you will apply for a tie-in permit; (2) you will propose a schedule for the removal of the discharge; or (3) you hold a pre-existing drainage tie-in permitⁱ. Should no response be received, a follow-up site investigation will be performed. At that time, should an illicit and/or unauthorized connection or discharge be confirmed, the matter will be forwarded to MassDOT's Chief Legal Counsel for enforcement in conjunction with the Attorney General's Office. This may include fines or penalties of up to \$1,000 per day.

Please be aware, however, that applying for a tie-in permit does not guarantee being granted one and an internal review will be performed in order to determine if the connection or discharge should be permitted.

Thank you for your anticipated cooperation in resolving this matter. Please contact the District __ Permits Engineer, _____, at _____ at your earliest convenience within the 90-day period.

Sincerely,

[District Highway Director's Signature]

[District Highway Director's Name]

District __ Highway Director

Attachment: Standard Operating Procedure No. HMD-02-02-2-000 (dated 3/19/2012)

cc: Henry Barbaro (w/o attachment), MassDOT Environmental Services Section

ⁱ In the case of a pre-existing permit, MassDOT will consider rescinding the NOV.

Appendix C: Impaired Waters Program – Summary of NPDES Permit Year 20

Appendix C

Impaired Waters Program

Summary of NPDES Permit Year 20



Table of Contents

1.0 Overview	3
2.0 Phase 1 of the Impaired Waters Program.....	4
2.1 TMDL Waterbodies.....	5
3.0 Phase 2 of the Impaired Waters Program.....	5
4.0 Pollutant Removal.....	6
5.0 Project Funding.....	6
6.0 Water Quality Data Form	7
7.0 SCM Data Management and Tracking.....	7
8.0 SCM Inspections and Maintenance.....	8
9.0 Drainage Mapping.....	8

List of Tables

Table 1 Status of Remaining Phase 1 IWP Projects	5
Table 2 Status of Phase 2 IWP Retrofit Projects	6
Table 3 IWP Construction Project Funding	7

1.0 Overview

MassDOT Highway Division (MassDOT) developed the Impaired Waters Program (IWP) to address roadway stormwater runoff discharging to impaired waters across the state as part of our commitment to improving the quality of stormwater runoff from our highways, compliance with the National Pollutant Discharge Elimination System (NPDES) Phase II Small Municipal Separate Storm Sewer System (MS4) General Permit, and commitments in the EPA enforcement order letter to MassDOT dated April 22, 2010. “Impaired” water bodies are those listed as Category 4a or 5 in MassDEP’s Integrated List of Waters.¹

Starting in June 2010, MassDOT made a five-year commitment as part of the EPA enforcement order compliance to assess all impaired water body segments that receive stormwater runoff from MassDOT roadways located in the MS4 area. A water body assessment includes identifying if runoff from the MassDOT roadways drains to the water body, whether stormwater is contributing to the impairment, and whether existing Stormwater Control Measures (SCMs, previously referred to as Best Management Practices (BMPs)) effectively treat runoff from the roadways. The assessment then sets a pollutant removal target for the specific receiving water and, if the target is not currently met, MassDOT will design and construct additional water quality SCMs where site conditions allow. MassDOT completed assessments of 684 water bodies. In following years, MassDOT expanded the water bodies list to encompass additional urban area identified in the 2010 census, impaired waters listed on the 2012 final 303(d) list, and MassDOT property acquired since the enforcement (e.g., MassTurnpike) as part of our good-faith commitment to improve stormwater runoff quality from their highways. In total, MassDOT assessed 826 water bodies in five years.

To utilize tax dollars most effectively, MassDOT has implemented the construction of SCMs through two initiatives: Retrofit and Programmed Projects. First, MassDOT has maximized the construction of SCMs as part of major programmed projects where significant improvements are planned for a roadway or intersection (e.g., intersection improvement, highway widening) and it’s feasible to include stormwater treatment upgrades. MassDOT evaluates the project area draining to the impaired water body and maximizes the installation of structural SCMs as site constraints allow, which may exceed the pollutant removal target set in the assessment.

In areas where programmed projects are not planned and the assessment identified needed pollutant removal, MassDOT has proactively identified locations to install SCMs along existing roadways, as stand-alone retrofit projects or, more typically, incorporated into resurfacing projects. From the areas identified in the assessments, MassDOT has constructed approximately 95% of these retrofit projects and plans to continue the design and construction expeditiously to advertise the remaining retrofit projects.

MassDOT catalogs the constructed improvements through a water quality data form (WQDF) submitted by designers which MassDOT then uploads and tracks in the associated stormwater assets database. MassDOT updated the form to capture additional SCM treatment information and released a revised WQDF in October 2022.

This report summarizes the progress for the IWP program and other supporting initiatives.

¹ MassDEP. Integrated List of Waters & Related Reports. Retrieved from <https://www.mass.gov/lists/integrated-lists-of-waters-related-reports>.

This report also provides an update on a second phase of the IWP, where MassDOT is shifting to a watershed-based treatment approach, through programmed projects. We understand that the anticipated requirements of the future MassDOT TS4 permit will likely focus on water quality treatment for each watershed, as opposed to individual water bodies.

2.0 Phase 1 of the Impaired Waters Program

Starting in 2010, MassDOT made a commitment to assess all impaired water body segments that receive stormwater runoff from MassDOT roadways located in the MS4 area by June 2015. The assessments included identifying target reductions from MassDOT direct discharges to the impaired waterbodies. MassDOT has been designing and constructing SCMs to reduce pollutants as part of projects and has programmed (i.e., identified funding for design and construction) construction of all SCMs determined feasible to meet the commitment.

Retrofit projects (stand-alone or coupled with resurfacing) are projects that target specific locations where constructing SCMs will provide an improvement in the water quality of stormwater discharges to impaired water bodies. Retrofit targets focus on directly discharging drainage to the receiving water following the methodology developed by MassDOT for the Impaired Waters Program. For retrofit projects moving forward with SCM design, MassDOT assigned the projects to a IWP designer under contract. The designers performed a more detailed review of the MassDOT urban area roads directly draining to the receiving water to identify site constraints (e.g., soils, wetlands, utility conflicts) that may limit potential SCM locations, and requested survey and geotechnical information as needed. The designer developed the design of SCMs to meet the pollutant load reduction to the maximum extent practicable and prepared permit applications and construction plans.

Major programmed projects included in the Statewide Transportation Improvement Plan (STIP), or otherwise included in MassDOT's program for construction, provide an excellent opportunity to further incorporate SCMs and improve water quality. Unlike retrofit SCMs, these projects may allow for holistic site planning, where drainage can be redirected, and stormwater management can be included in the overall plan for the site. Also, major programmed projects allow for the potential to increase the right-of-way and/or move conflicting utilities. Therefore, MassDOT has multiple types of projects that discharge stormwater runoff to impaired waters, including municipal projects undertaken by MassDOT for local municipalities and projects outside the jurisdiction of the MS4 Permit, in which to include additional SCMs.

Table 1 lists the remaining projects and associated impaired waterbodies where structural SCM retrofits were needed to address impairments related to stormwater as part of MassDOT's IWP commitment with EPA.

Table 1 Status of Remaining Phase 1 IWP Projects

Projects in Design				
Water Body ID	Water Body Name	Project Name	Design Status	Ad Date
MA62-04	Taunton River	Somerset - Stormwater Improvements along Route 6, Route 79, Route 138, Route 103 for Taunton River	Pre-Design	2026*
Projects in Construction**				
Water Body ID	Water Body Name	Project Name		
MA70-02	Boston Inner Harbor	Boston Inner Harbor Stormwater Improvements		
MA61-06	Mount Hope Bay	Somerset - Stormwater Improvements along I-195 for Mount Hope Bay		
MA41-05	Cady Brook	I-90 at Cady Brook		
MA42-03	French River	I-90 at French River		

*Preliminary design and site survey is underway for this IWP project. The ad date has been moved from 2023 to 2026 due to scheduling constraints.

**Projects that are in construction include projects which have been advertised for construction.

2.1 TMDL Waterbodies

The 2010 EPA enforcement specifically required that “*all TMDL waters in urbanized areas to which MassDOT discharges must have been evaluated to determine if existing BMPs are sufficient and, if not, MassDOT must have identified additional controls that should be implemented*”. By 2015, MassDOT had evaluated all waters with TMDLs that potentially received MassDOT discharges, evaluated the need for additional controls, and identified funding to construct SCMs where construction was determined feasible. MassDOT continues to review opportunities to incorporate structural SCMs to treat drainage to waters with TMDLs through programmed projects.

3.0 Phase 2 of the Impaired Waters Program

Now that MassDOT has programmed construction of the stormwater control measures identified necessary to address the EPA enforcement order, MassDOT is developing a second phase of the program. Phase 2 moves away from tracking by individual impaired water to a watershed-based approach. This approach aligns with EPA’s water quality treatment goals outlined in the 2016 MS4 Permit for other municipalities, which focuses on stormwater improvements at the watershed scale and prioritizes TMDL watersheds.

Based on the EPA priorities in the 2016 MS4 permit requirements, MassDOT has proactively prioritized projects for Phase 2 to include stormwater treatment in the Charles River watershed and the various lakes and ponds in central Massachusetts that have TMDLs with phosphorus reduction targets. Additionally, EPA issued an Alternative TMDL for Mystic River watershed focused on phosphorus reduction in May of 2020 and therefore MassDOT is also considering it a priority watershed.

The majority of Phase 2 IWP projects will be implemented through programmed projects by using the WQDF to include stormwater treatment on MassDOT projects. See Section 6 for more information on the WQDF. MassDOT also has retrofit projects in progress with the goal to meet watershed treatment goals, and the status of those projects is provided in Table 2.

Table 2 Status of Phase 2 IWP Retrofit Projects

Projects in Design				
Water Body ID	Water Body Name	Project Name	Design Status	Ad Date
MA81147	Wachusett Reservoir*	Sterling - Stormwater Improvement at Wachusett Reservoir	25%	TBD
MA81-05	Nashua River**	Route 2 at Nashua River	PS&E– under review	TBD
MA82125	Lake Cochituate**	Rt. 9 at Lake Cochituate Middle Basin	PS&E– under review	TBD
MA97-11	Lagoon Pond	Tisbury - Drainage Improvements on State Highway	25%	1/6/2024
MA51188	Flint Pond***	Route 20 Worcester	Pre-Design	6/1/2024
Projects in Construction				
Water Body ID	Water Body Name	Project Name		
MA62-14	Robinson Brook	Foxborough Stormwater Retrofit at Various Locations		
MA62-47	Wading River	Foxborough Stormwater Retrofit at Various Locations		
MA51-08	Unnamed Tributary	I-290, I-90, Rt. 146, Rt. 12 at Unnamed Tributary		

*Through a partnership with the Massachusetts Department of Conservation and Recreation (DCR), MassDOT has completed 25% design of this project. However, the implementation of this project is still being determined and advertisement date is to be determined.

**Review is ongoing to identify if SCM design can be incorporated into future resurfacing projects. Advertisement date is to be determined.

***Stormwater treatment is being incorporated as feasible into this flood control project, which is focused on alleviating flooding on Route 20 adjacent to Flint Pond.

4.0 Pollutant Removal

The MassDOT IWP uses effective impervious cover as the metric to evaluate the impact of stormwater runoff to receiving waterbody stream quality, as outlined in MassDOT's IC Method (MassDOT's Application of the Impervious Cover Method in BMP 7U, 2011). Based on MassDOT's current stormwater asset database to date, MassDOT has constructed 1,026 various treatment SCMs as part of the IWP which provide more than 625 acres of effective impervious cover reduction from MassDOT property. MassDOT will continue to add SCMs and treatment data and calculate credits for existing SCMs as the stormwater asset database and mapping program evolves. MassDOT SCM data is available at this link:

<https://massdot.maps.arcgis.com/apps/webappviewer/index.html?id=46b8552ac03e47da9b8feaf5a4df7002>

5.0 Project Funding

MassDOT continues to fund the construction of IWP projects. Table 3 below summarizes past funding for the MassDOT IWP and estimates future funding over the next five years. Funding is provided for construction of SCMs through a mixture of Federal Highway Administration (FHWA) Transportation Improvements Program (TIP) funds and state funds for SCM retrofit projects (stand-alone or coupled with resurfacing).

Table 3 IWP Construction Project Funding

Federal Fiscal Year	FY9-22	FY23	FY24	FY25	FY26	FY27	FY28
Stormwater Improvement Construction Funding (\$M)	55.1	1.5	1.5	1.5	3.0	2.0	2.0

6.0 Water Quality Data Form

MassDOT's Environmental Section identifies programmed projects discharging to impaired waters through questions included in water quality data forms (WQDFs) submitted as part of the project's 25% design phase, and then again at the 75% design phase. The form provides designers with general guidance for implementing SCMs given the project type and watershed the project is located within, gathers water quality and stormwater improvement data, and conducts data validation. The form solicits specific location information for each proposed structural SCM (including pavement disconnection) and their ancillary structures (e.g., check dams, sediment forebays), which MassDOT uses to load into the stormwater assets database.

Additionally, the WQDF captures documentation regarding sensitive site design elements include measures such as preserving existing vegetation, natural drainage patterns, and riparian buffers; minimizing disturbance to wetland resource areas; promoting sheet flow to vegetated areas; and reducing existing impervious cover.

MassDOT finalized and released a revised WQDF in October 2022 which emphasizes the importance of taking an Integrated Site Design (ISD) approach to incorporating stormwater treatment into a roadway project. The revised WQDF implements a consistent SCM accounting protocol based on EPA's treatment curve methodology so SCM treatment credits can be tracked accurately and consistently with the latest research. The revised WQDF performs the following functions:

- Provides guidance to designers on treatment requirements for impaired waters and TMDLs;
- Prompts the designer to consider Low Impact Development (LID) as a primary control measure to minimizing runoff and pollutants;
- Collects treatment data for all MassDOT projects with structural SCMs, not just impaired waters projects; and
- Assists MassDOT in tracking pollutant reduction specifically in TMDL watersheds.

The WQDF directs users to the MassDOT Stormwater Design Guide (SDG) for guidance on the design of structural SCMs. The SDG is written to provide guidance for designs to achieve MassDEP Wetlands Protection Act compliance while following MassDOT's priorities for stormwater treatment in watersheds with TMDLs. The SDG is currently under review internally at MassDOT but once published will supersede the MassHighway Storm Water Handbook.

7.0 SCM Data Management and Tracking

The revised WQDF will provide a systematic way for MassDOT's Environmental Section to collect treatment data for all MassDOT projects with structural SCMs. This improvement will allow MassDOT to track pollutant reduction more accurately and assist in targeting nutrient reduction specifically in TMDL watersheds.

MassDOT has continued to maintain and update the SCM data layer within the stormwater asset database to track structural SCMs proposed and constructed by our design consultants. This SCM data layer is a powerful tool in the analysis of MassDOT's program and future planning/ water quality analysis and will allow MassDOT to summarize treatment by watershed for reporting and tracking. The SCM data layer allows for tracking of SCM inspections and has been refined in the future to continue to better meet the needs of inspection and maintenance tracking. Currently the SCM data layer within the stormwater asset database contains approximately 1,650 features.

8.0 SCM Inspections and Maintenance

This past permit year, MassDOT reviewed past SCM inspections to inform future rehabilitation and required drainage system maintenance work. Additionally, MassDOT completed 41 SCM inspections and found 12 SCMs requiring action. MassDOT is continuing SCM inspections this year and will begin the next round of inspections in Spring of 2023.

Information collected during the SCM and associated component inspections include:

- Overall condition (scale of good to failing)
- Level of erosion
- Vegetative health
- SCM accessibility
- Standing water
- Maintenance action needed or completed (for variety of maintenance activities such as structural repair, regrading, erosion, removal of trash/debris, removal of sediment, vegetation restoration, etc.)

The SCM inspections are recorded in MassDOT's stormwater asset database using MassDOT-created inspection forms through ArcGIS online applications. This data will continue to support the determination of optimal maintenance frequency for each SCM type.

9.0 Drainage Mapping

This past year MassDOT completed work on a pilot program for mapping MassDOT drainage with the goal to collect information on SCMs and drainage features not already documented. Following completion of the Drainage Mapping Pilot, MassDOT initiated work to expand this effort statewide as part of MassDOT's larger Asset Management Initiative. Informed by lessons learned from the pilot effort, MassDOT began updating the Drainage Mapping Guide for MassDOT staff to use for new mapping efforts. MassDOT has begun identifying towns to focus on as part of the new statewide mapping effort and staff are anticipated to begin mapping work in Summer 2023.

Appendix D: Design Public Hearings Table

Design Public Hearings

Project Number	Project Description	Project Manager	Meeting Type	Scheduled Date
608858	CHARLEMONT- BRIDGE REPLACEMENT, C-05-042, EAST OXBOW ROAD OVER OXBOW BROOK	Shahpar Negah	Design Public Hearing	4/16/2022
608562	SOMERVILLE- SIGNAL AND INTERSECTION IMPROVEMENT ON I-93 AT MYSTIC AVENUE AND MCGRATH HIGHWAY (TOP 200 CRASH LOCATION)	David Shedd	Design Public Hearing	5/2/2022
608640	SUTTON- GRAFTON- BRIDGE RECONSTRUCTION/REHABILITATION, S-33-004, DEPOT STREET OVER THE BLACKSTONE RIVER	Christopher Cameron	Design Public Hearing	5/8/2022
608886	CHESTERFIELD- RECONSTRUCTION OF NORTH ROAD AND DAMON POND ROAD	Janhavi Limaye	Design Public Hearing	5/8/2022
608961	WORCESTER- INTERSECTION IMPROVEMENTS ON CHANDLER STREET AND MAY STREET	Joe Yoo	Design Public Hearing	5/15/2022
607214	STOUGHTON- RECONSTRUCTION OF TURNPIKE STREET	Shahpar Negah	Design Public Hearing	5/16/2022
606801	BOSTON- VENT STACK EXTERIOR REPLACEMENT TO THREE I-93 FAN CHAMBERS (DEWEY SQUARE)	Edmond Libsch	Design Public Hearing	5/16/2022
610716	WILLIAMSTOWN- INTERSECTION IMPROVEMENTS AT ROUTE 7 AND ROUTE 43	Johnathan Freeman	Design Public Hearing	5/21/2022
609211	PEABODY- INDEPENDENCE GREENWAY EXTENSION	Stephanie Upson	Design Public Hearing	5/22/2022
609072	WILLIAMSTOWN- BRIDGE REPLACEMENT, W-37-010, MAIN STREET OVER HEMLOCK BROOK	Daniel Wilk	Design Public Hearing	5/23/2022
609387	DISTRICT 4- ADA RETROFITS AT VARIOUS LOCATIONS	Eric Nova	Design Public Hearing	7/13/2022
608930	LAWRENCE- LAWRENCE MANCHESTER RAIL CORRIDOR (LMRC) RAIL TRAIL	Lawrence Cash	Design Public Hearing	7/21/2022
609277	NORTH ADAMS- RECONSTRUCTION OF ASHLAND STREET	Herrio Lamothe	Design Public Hearing	8/24/2022
608547	EGREMONT- RECONSTRUCTION OF MOUNT WASHINGTON ROAD (PHASE I)	Augustin Manyowashington	Design Public Hearing	7/26/2022
612631	CHELMSFORD- BRIDGE REPLACEMENT, C-08-039, GORHAM STREET (ST 3A) OVER I-495 AND REPLACEMENT OF C-08-036, WESTFORD STREET OVER I-495 (DB)	Aleksey N Belov	Design Public Hearing	8/10/2022
606783	NEWTON- WESTON- BRIDGE BUNDLE, REPLACEMENT AND REHABILITATION AT I-90/I-95 INTERCHANGE INCLUDING RAMP G (DB)	Valerie E Kilduff	Design Public Hearing	8/18/2022
610659	STERLING- STORMWATER DRAINAGE IMPROVEMENTS AT WACHUSETT RESERVOIR ON ROUTE 110 (METROPOLITAN ROAD)	Koby Lemrise	Design Public Hearing	8/23/2022
609277	NORTH ADAMS- RECONSTRUCTION OF ASHLAND STREET	Herrio Lamothe	Design Public Hearing	8/24/2022
609389	WENHAM- SAFETY IMPROVEMENTS ON ROUTE 1A	Daniel Wilk	Design Public Hearing	9/8/2022
610670	HARWICH- HARWICH ELEMENTARY SCHOOL (SRTS)	Johnathan Freeman	Design Public Hearing	9/13/2022
612231	BOSTON- BRIDGE PRESERVATION, B-16-357, B-16-358, B-16-359 AND B-16-369, I-90 (EB & WB) OVER MBTA	John Fallon	Design Public Hearing	9/14/2022
608774	LOWELL- TEWKSBURY- ROUTE 38 INTERSECTION IMPROVEMENTS	Ryan P. Wilcox	Design Public Hearing	9/14/2022
609179	SPENCER- BRIDGE REPLACEMENT, S-23-012, NORTH SPENCER ROAD (ROUTE 31) OVER THE SEVEN MILE RIVER	William Brown	Design Public Hearing	9/15/2022
609518	FAIRHAVEN- LEROY WOOD ELEMENTARY SCHOOL IMPROVEMENTS (SRTS)	Linda Walsh	Design Public Hearing	9/15/2022
609528	GRAFTON- MILLBURY STREET IMPROVEMENTS (SRTS)	Filbert Yee	Design Public Hearing	9/20/2022
608954	WESTON- RECONSTRUCTION ON ROUTE 30	Stephanie Upson	Design Public Hearing	9/22/2022
608491	MENDON- RESURFACING AND RELATED WORK ON ROUTE 16	Kimberley Sloan	Design Public Hearing	9/22/2022
609437	SALEM- PEABODY- BOSTON STREET IMPROVEMENTS	Anni H Autio	Design Public Hearing	9/27/2022
609288	NEWTON- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT INTERCHANGE 127 (NEWTON CORNER)	Muazzez G Reardon	Design Public Hearing	9/28/2022
612557	FAIRHAVEN- NEW BEDFORD- BRIDGE REPLACEMENT, F-01-002=N-06-001 (3PF), US-6 OVER ACUSHNET RIVER	Joseph Breen	Design Public Hearing	10/3/2022
605294	DUXBURY- BRIDGE REPLACEMENT, D-14-010 (48H & 48J), ROUTE 3 (PILGRIM HIGHWAY) NB/SB OVER FRANKLIN STREET	Valerie E Kilduff	Design Public Hearing	10/6/2022
612557	FAIRHAVEN- NEW BEDFORD- BRIDGE REPLACEMENT, F-01-002=N-06-001 (3PF), US-6 OVER ACUSHNET RIVER	Joseph Breen	Design Public Hearing	10/6/2022
606901	BOSTON- BRIDGE REPLACEMENT, B-16-109, RIVER STREET BRIDGE OVER MBTA/AMTRAK	Kathy Dougherty	Design Public Hearing	10/11/2022
608514	BEVERLY- BRIDGE REPLACEMENT, B-11-001, BRIDGE STREET OVER BASS RIVER (HALL-WHITAKER DRAWBRIDGE)	Robert P Antico	Design Public Hearing	10/11/2022
607342	MILTON- INTERSECTION IMPROVEMENTS AT ROUTE 28 (RANDOLPH AVENUE) & CHICKATAWBUT ROAD	Joshua Bartus	Design Public Hearing	10/27/2022

Project Number	Project Description	Project Manager	Meeting Type	Scheduled Date
608171	UXBRIDGE- RECONSTRUCTION OF ROUTE 122 (SOUTH MAIN STREET), FROM SUSAN PARKWAY TO ROUTE 16	Janhavi Limaye	Design Public Hearing	11/9/2022
609383	DISTRICT 5- ADA RETROFITS AT VARIOUS LOCATIONS	Greg Frazier	Design Public Hearing	11/9/2022
607420	NATICK- SUPERSTRUCTURE REPLACEMENT, N-03-012, BODEN LANE OVER CSX/MBTA	John Fallon	Design Public Hearing	11/15/2022
608020	BOURNE- CAPE COD CANAL AREA ROADWAY IMPROVEMENTS	Bryan J Cordeiro	Design Public Hearing	11/15/2022
607977	HOPKINTON- WESTBOROUGH- RECONSTRUCTION OF I-90/I-495 INTERCHANGE	Gary Baxter	Design Public Hearing	11/16/2022
609202	GREENFIELD- RESURFACING AND RELATED WORK ON MONTAGUE CITY ROAD	Eric Nova	Design Public Hearing	11/16/2022
610704	BURLINGTON- BILLERICA- RESURFACING AND RELATED WORK ON ROUTE 3A	Daniel Wilk	Design Public Hearing	11/17/2022
608020	BOURNE- CAPE COD CANAL AREA ROADWAY IMPROVEMENTS	Bryan J Cordeiro	Design Public Hearing	11/17/2022
607710	SALISBURY- RESURFACING & RELATED WORK ON ROUTE 1A	Eric Nova	Design Public Hearing	11/30/2022
610542	BOURNE- ROTARY IMPROVEMENTS	Adetoyin Ayoola Olaoye	Design Public Hearing	12/1/2022
604499	LEOMINSTER- RECONSTRUCTION/ REHABILITATION ON ROUTE 12 (CENTRAL STREET), INCLUDING REHABILITATION OF L-08-022	David Shedd	Design Public Hearing	12/1/2022
611982	MEDFORD- SHARED USE PATH CONNECTION AT THE ROUTE 28/WELLINGTON UNDERPASS	Linda Walsh	Design Public Hearing	12/8/2022
608634	DEERFIELD- BRIDGE REPLACEMENT, D-06-001, UPPER ROAD OVER DEERFIELD RIVER	Christopher Cameron	Design Public Hearing	12/13/2022
609120	LUDLOW- BRIDGE REPLACEMENT, L-16-026, PINEY LANE OVER BROAD BROOK	Anthony Christakis	Design Public Hearing	12/14/2022
608753	TAUNTON- CORRIDOR IMPROVEMENTS AND RELATED WORK ON BROADWAY (ROUTE 138), FROM PURCHASE STREET TO JACKSON STREET (PHASE 2)	Janhavi Limaye	Design Public Hearing	12/14/2022
608189	FITCHBURG- BRIDGE REPLACEMENT AND RELATED WORK, F-04-017, WATER STREET (STATE 2A) OVER BOULDER DRIVE AND PANAM RAILROAD & F-04-018, WATER STREET (ROUTE 12) OVER NORTH NASHUA RIVER	Jacob Tanoglu	Design Public Hearing	12/15/2022
608814	SPENCER- RESURFACING AND RELATED WORK ON ROUTE 9	Muazzez G Reardon	Design Public Hearing	1/5/2023
612988	NORTHAMPTON- ROUNDABOUT CONSTRUCTION AT INTERSECTION OF ROUTES 5/10 (NORTH KING STREET) & HATFIELD STREET	David Shedd	Design Public Hearing	1/10/2023
606902	BOSTON- BRIDGE REPLACEMENT, B-16-181, WEST ROXBURY PARKWAY OVER MBTA	Anthony Christakis	Design Public Hearing	1/11/2023
609531	ARLINGTON- STRATTON SCHOOL IMPROVEMENTS (SRTS)	Johnathan Freeman	Design Public Hearing	1/12/2023
609438	CANTON- BRIDGE REPLACEMENT, C-02-042, REVERE COURT OVER WEST BRANCH OF THE NEPONSET RIVER	Courtney Sulerud	Design Public Hearing	1/12/2023
611985	HARWICH- SIDEWALK INSTALLATION ON ROUTE 28 FROM BANK STREET TO SAQUATUCKET HARBOR	Thomas H Currier	Design Public Hearing	1/17/2023
609470	DISTRICT 3- ADA RETROFITS AT VARIOUS LOCATIONS	Greg Frazier	Design Public Hearing	1/19/2023
608020	BOURNE- CAPE COD CANAL AREA ROADWAY IMPROVEMENTS	Bryan J Cordeiro	Design Public Hearing	1/24/2023
609427	MONTAGUE- BRIDGE REPLACEMENT, M-28-026, SOUTH STREET OVER SAWMILL RIVER	Christopher Cameron	Design Public Hearing	1/24/2023
608742	DENNIS- HARWICH- RECONSTRUCTION & RELATED WORK ON MAIN STREET (ROUTE 28), FROM UPPER COUNTY ROAD TO THE HERRING RIVER BRIDGE	Thomas H Currier	Design Public Hearing	1/25/2023
607977	HOPKINTON- WESTBOROUGH- RECONSTRUCTION OF I-90/I-495 INTERCHANGE	Gary Baxter	Design Public Hearing	1/25/2023
608788	HAVERHILL- ROADWAY RECONSTRUCTION ON NORTH AVENUE, FROM MAIN STREET (ROUTE 125) TO PLAISTOW NH	Stephanie Upson	Design Public Hearing	1/25/2023
608490	UPTON- RESURFACING AND RELATED WORK ON ROUTE 140 AND ROUNDABOUT CONSTRUCTION AT ROUTE 140, CHURCH STREET AND GROVE STREET	Johnathan Freeman	Design Public Hearing	1/26/2023
608020	BOURNE- CAPE COD CANAL AREA ROADWAY IMPROVEMENTS	Bryan J Cordeiro	Design Public Hearing	1/26/2023
609459	TISBURY- DRAINAGE IMPROVEMENTS ON STATE HIGHWAY	Koby Lemrise	Design Public Hearing	1/30/2023
610768	WESTHAMPTON- BRIDGE REPLACEMENT, W-27-028, PERRY HILL ROAD OVER NORTH BROOK OF MANHAN RIVER	Harry Adolphe	Design Public Hearing	1/31/2023
607877	LOWELL- ROURKE BRIDGE REPLACEMENT, L-15-088, WOOD STREET EXTENSION OVER BOSTON AND MAINE RAILROAD AND MERRIMAC RIVER	Steven E McLaughlin	Design Public Hearing	2/7/2023
86461	LINCOLN- BRIDGE REPLACEMENT, L-12-002, CONCORD ROAD (ROUTE 126) OVER MBTA	Eamon Kernan	Design Public Hearing	2/8/2023
609469	DISTRICT 2- ADA RETROFITS AT VARIOUS LOCATIONS	Greg Frazier	Design Public Hearing	2/16/2023
609082	CONWAY- BRIDGE REPLACEMENT, C-20-004, NORTH POLAND ROAD OVER POLAND BROOK	Courtney Sulerud	Design Public Hearing	2/16/2023

Project Number	Project Description	Project Manager	Meeting Type	Scheduled Date
608397	GLOUCESTER- BRIDGE RECONSTRUCTION, G-05-002, WESTERN AVENUE OVER BLYNMAN CANAL	Joseph Breen	Design Public Hearing	2/23/2023
608562	SOMERVILLE- SIGNAL AND INTERSECTION IMPROVEMENT ON I-93 AT MYSTIC AVENUE AND MCGRATH HIGHWAY (TOP 200 CRASH LOCATION)	David Shedd	Design Public Hearing	3/1/2023
609288	NEWTON- TRAFFIC SIGNAL AND SAFETY IMPROVEMENTS AT INTERCHANGE 127 (NEWTON CORNER)	Muazzez G Reardon	Design Public Hearing	3/1/2023
610660	SUDBURY- WAYLAND- MASS CENTRAL RAIL TRAIL (MCRT)	Kathy Dougherty	Design Public Hearing	3/2/2023
613052	MANSFIELD- CORRIDOR IMPROVEMENTS ON CHAUNCY STREET (ROUTE 106) FROM STATE ROUTE 140 TO CORNHILL	DAVID SHEDD	Design Public Hearing	3/2/2023
610776	CAMBRIDGE- SUPERSTRUCTURE REPLACEMENT, C-01-031, US ROUTE 3/ROUTE 16/ROUTE 2 OVER MBTA REDLINE	Shahpar Negah	Design Public Hearing	3/7/2023
609532	CHELSEA- TARGETED SAFETY IMPROVEMENTS AND RELATED WORK ON BROADWAY, FROM WILLIAMS STREET TO CITY HALL AVENUE	Lawrence Cash	Design Public Hearing	3/9/2023
610919	LYNN- NAHANT- NORTHERN STRAND EXTENSION	Joe Yoo	Design Public Hearing	3/16/2023
608020	BOURNE- CAPE COD CANAL AREA ROADWAY IMPROVEMENTS	Bryan J Cordeiro	Design Public Hearing	3/22/2023
612757	BUCKLAND- RECONSTRUCTION OF UPPER NORTH STREET	Alolade O Campbell	Design Public Hearing	3/23/2023
608020	BOURNE- CAPE COD CANAL AREA ROADWAY IMPROVEMENTS	Bryan J Cordeiro	Design Public Hearing	3/29/2023
607871	DARTMOUTH- CORRIDOR IMPROVEMENTS ON ROUTE 6, FROM FAUNCE CORNER ROAD TO HATHAWAY ROAD	Thomas H Currier	Design Public Hearing	3/29/2023
609193	NORTON- INTERSECTION IMPROVEMENTS AT WEST MAIN STREET (ROUTE 123), NORTH WORCESTER STREET AND SOUTH WORCESTER STREET	Gregory Mischel	Design Public Hearing	3/29/2023
613005	DISTRICT 5- OFF-SYSTEM BRIDGE BUNDLE, D-14-008, L-01-011, L-01-015, M-03-018, P-13-031, P-13-035, W-06-038 (DB)	Marco Pereira	Design Public Hearing	3/30/2023

Appendix E: Active MassDOT Construction NOIs in Permit Year 19

Active Construction NOIs

District	Project Number	Project Description	Estimated Completion Date
1	608767	EGREMONT- RECONSTRUCTION AND RELATED WORK ON ROUTE 23/41, FROM CREAMERY ROAD TO NORTH UNDERMOUNTAIN ROAD	10/19/2024
1	606463	BUCKLAND- RECONSTRUCTION & MINOR WIDENING ON CONWAY STREET, SUMMER STREET, SOUTH STREET & CONWAY ROAD	11/1/2023
1	608485	PITTSFIELD- LANESBOROUGH- RESURFACING AND RELATED WORK ON ROUTE 8 (FROM MM 44.43 TO MM 47.77)	10/20/2022
1	606406	HINSDALE- PERU- RECONSTRUCTION OF SKYLINE TRAIL (MIDDLEFIELD ROAD)	7/27/2023
2	605126	WARE- BRIDGE REPLACEMENT, W-05-015, ROUTE 32 (PALMER ROAD) OVER THE WARE RIVER	TBD
2	608719	AMHERST- BELCHERTOWN- NORWOTTUCK RAIL TRAIL RESURFACING, FROM STATION ROAD IN AMHERST TO WARREN WRIGHT ROAD IN BELCHERTOWN (1.5 MILES)	TBD
2	608850	PETERSHAM- BRIDGE REPLACEMENT, P-08-002, GLEN VALLEY ROAD OVER EAST BRANCH OF SWIFT RIVER	TBD
2	605384	AGAWAM- WEST SPRINGFIELD- BRIDGE REPLACEMENT, A-05-002=W-21-014, ROUTE 147 OVER THE WESTFIELD RIVER & INTERSECTION & SIGNAL IMPROVEMENTS @ 3 LOCATIONS	TBD
2	608327	BRIMFIELD- PALMER- WARREN- WILBRAHAM- INTERSTATE MAINTENANCE & RELATED WORK ON I-90 (MM 59.0 - 68.0)	TBD
2	605032	HADLEY- RECONSTRUCTION ON ROUTE 9, FROM MIDDLE STREET TO MAPLE/SOUTH MAPLE STREET	TBD
2	606548	GREENFIELD- BRIDGE REPLACEMENT, G-12-052 (0XR) & G-12-053 (0XT), I-91 (NB & SB) OVER BMRR	TBD
2	608325	CHICOPEE- INTERSTATE MAINTENANCE & RELATED WORK ON I-90 (MM 46.4 - 50) (3.6 MILES)	TBD
2	608326	CHICOPEE- LUDLOW- PALMER- WILBRAHAM- GUARDRAIL UPGRADES & RELATED WORK ON I-90 (MM 50 - 61.4)	TBD
2	607502	NORTHAMPTON- INTERSECTION IMPROVEMENTS AT KING STREET, NORTH STREET & SUMMER STREET AND AT KING STREET & FINN STREET	TBD
2	606309	ORANGE- BRIDGE REPLACEMENT, O-03-021, ROUTE 2 OVER ROUTE 202	TBD
2	606220	HARDWICK- RESURFACING & RELATED WORK ON THE GILBERTVILLE SECTIONS OF ROUTES 32 AND 32A	TBD
2	607773	WESTFIELD- IMPROVEMENTS & RELATED WORK ON ROUTE 20, COURT STREET & WESTERN AVENUE, LLOYDS HILL ROAD TO HIGH STREET/MILL STREET INTERSECTION (PHASE II)	TBD
2	608724	GREENFIELD- RECONSTRUCTION OF WISDOM WAY, FROM 480 FEET EAST OF PETTY PLAIN ROAD TO MILL STREET (0.43 MILES)	TBD
2	608084	AMHERST- IMPROVEMENTS & RELATED WORK ON ROUTES 9 & 116, FROM UNIVERSITY DRIVE TO SOUTH PLEASANT STREET (0.8 MILES)	TBD
2	604439	WINCHENDON- IMPROVEMENTS & RELATED WORK ON CENTRAL STREET (ROUTE 202), FROM FRONT STREET TO MAPLE STREET (0.5 MILES)	TBD
2	604434	CHICOPEE- RECONSTRUCTION & RELATED WORK ON FULLER ROAD, FROM MEMORIAL DR (RTE 33) TO SHAWINIGAN DR (2.0 MILES)	TBD

District	Project Number	Project Description	Estimated Completion Date
2	608577	EASTHAMPTON- IMPROVEMENTS AND RELATED WORK ON UNION STREET (ROUTE 141) FROM PAYSON AVENUE TO HIGH STREET (0.36 MILES)	TBD
2	608473	SOUTH HADLEY- RESURFACING AND RELATED WORK ON ROUTE 116	TBD
3	608443	LITTLETON- AYER- INTERSECTION IMPROVEMENTS ON ROUTE 2A AT WILLOW ROAD AND BRUCE STREET	5/17/2024
3	609099	MILFORD- HOPKINTON- WESTBOROUGH- SOUTHBOROUGH- RESURFACING AND RELATED WORK ON I-495N	12/23/2023
3	602659	CHARLTON- OXFORD- RECONSTRUCTION ON ROUTE 20, FROM RICHARDSON'S CORNER EASTERLY TO ROUTE 12, INCLUDES REHAB OF C-06-023 & REPLACEMENT OF O-06-002	10/21/2026
3	609529	LEOMINSTER- VISCOLOID AVENUE IMPROVEMENTS (SRTS)	3/31/2024
3	607977	HOPKINTON- WESTBOROUGH- RECONSTRUCTION OF I-90/I-495 INTERCHANGE	6/24/2027
3	608793	HUBBARDSTON- HIGHWAY RECONSTRUCTION OF ROUTE 68 (MAIN STREET), FROM 1,000 FT NORTH OF WILLIAMSVILLE ROAD TO ELM STREET	4/26/2024
3	608229	ACTON- INTERSECTION & SIGNAL IMPROVEMENTS AT KELLEY'S CORNER, ROUTE 111 (MASSACHUSETTS AVENUE) AND ROUTE 27 (MAIN STREET)	9/26/2025
3	608887	BELLINGHAM- REHABILITATION AND RELATED WORK ON ROUTE 126, FROM DOUGLAS DRIVE TO ROUTE 140	7/15/2024
3	608561	LEOMINSTER- IMPROVEMENTS AT ROUTE 12 (NORTH MAIN STREET) AT HAMILTON STREET; ROUTE 12 (NORTH MAIN STREET) AT NELSON STREET	11/18/2023
3	605034	NATICK- RECONSTRUCTION OF ROUTE 27 (NORTH MAIN STREET), FROM NORTH AVENUE TO THE WAYLAND T.L.	7/23/2023
3	604123	ASHLAND- RECONSTRUCTION ON ROUTE 126 (POND STREET), FROM THE FRAMINGHAM T.L. TO THE HOLLISTON T.L.	4/15/2024
3	608467	MARLBOROUGH- RESURFACING AND RELATED WORK ON ROUTE 20	10/22/2024
3	608228	FRAMINGHAM- RECONSTRUCTION OF UNION AVENUE, FROM PROCTOR STREET TO MAIN STREET	5/23/2024
3	605651	LEOMINSTER- RECONSTRUCTION ON ROUTE 13, FROM HAWES STREET TO PROSPECT STREET	5/28/2022
3	608603	DUNSTABLE- IMPROVEMENTS ON MAIN STREET (ROUTE 113), FROM PLEASANT STREET TO 750 FT EAST OF WESTFORD STREET	11/17/2023
3	605342	STOW- BRIDGE REPLACEMENT, S-29-001, (ST 62) GLEASONDALE ROAD OVER THE ASSABET RIVER	11/1/2022
3	607556	AUBURN- BRIDGE REHABILITATION, A-17-046, I-90 INTERCHANGE 10 RAMP OVER ROUTE 12	4/10/2023
3	609481	STURBRIDGE- INTERSTATE MAINTENANCE & RELATED WORK ON I-90 (STURBRIDGE T.L. TO I-84 INTERCHANGE)	9/28/2022
3	608764	UPTON- RECONSTRUCTION OF HARTFORD AVENUE NORTH AND HIGH STREET (PHASE II)	7/31/2022
3	606632	HOPKINTON- WESTBOROUGH- BRIDGE REPLACEMENT, H-23-006=W-24-016, FRUIT STREET OVER CSX & SUDBURY RIVER	1/19/2023
4	605178	BILLERICA- REHABILITATION ON BOSTON ROAD (ROUTE 3A) FROM BILLERICA TOWN CENTER TO FLOYD STREET	7/23/2026
4	609038	TEWKSBURY- LOWELL- INTERSECTION IMPROVEMENTS AT ANDOVER STREET (ROUTE 133) AND RIVER ROAD	9/23/2024

District	Project Number	Project Description	Estimated Completion Date
4	608375	CHELMSFORD- INTERSECTION IMPROVEMENTS AT BOSTON ROAD AND CONCORD ROAD	4/30/2023
4	609392	ROWLEY- SAFETY IMPROVEMENTS AT ROUTE 1, CENTRAL AND GLEN STREETS	10/1/2023
4	602077	LYNN- RECONSTRUCTION ON ROUTE 129 (LYNNFIELD STREET), FROM GREAT WOODS ROAD TO WYOMA SQUARE	10/3/2024
4	609038	TEWKSBURY- LOWELL- INTERSECTION IMPROVEMENTS AT ANDOVER STREET (ROUTE 133) AND RIVER ROAD	9/23/2024
4	604996	WOBURN- BRIDGE REPLACEMENT, W-43-017, NEW BOSTON STREET OVER MBTA	6/30/2025
4	602932	LOWELL- BRIDGE REPLACEMENT, L-15-058, VFW HIGHWAY OVER BEAVER BROOK	10/1/2018
4	606223	ACTON- CONCORD- BRUCE FREEMAN RAIL TRAIL CONSTRUCTION, INCLUDES REPLACING BRIDGE C-19-037, RAIL TRAIL OVER NASHOBA BROOK, NEW BRIDGE C-19-039, RAIL TRAIL OVER ROUTE 2 & NEW CULVERT C-19-040, ROUTE 2 OVER WILDLIFE CROSSING (PHASE II-B)	7/27/2022
4	607652	EVERETT- RECONSTRUCTION OF FERRY STREET, SOUTH FERRY STREET AND A PORTION OF ELM STREET	6/5/2025
4	608761	HAVERHILL- INTERSECTION RECONSTRUCTION ON ROUTE 108 (NEWTON ROAD) AT ROUTE 110 (KENOZA AVENUE AND AMESBURY ROAD)	3/15/2024
4	608298	GROVELAND- GROVELAND COMMUNITY TRAIL, FROM MAIN STREET TO KING STREET	6/10/2024
4	608350	DRACUT- IMPROVEMENTS ON NASHUA ROAD	7/20/2024
4	604952	LYNN- SAUGUS- BRIDGE REPLACEMENT, L-18-016=S-05-008, ROUTE 107 OVER THE SAUGUS RIVER (AKA - BELDEN G. BLY BRIDGE)	3/16/2027
4	608420	LOWELL- RECONSTRUCTION AND REHABILITATION OF FIVE BRIDGES (ENEL BRIDGES) TIGER GRANT	4/26/2022
4	604935	WOBURN- RECONSTRUCTION OF MONTVALE AVENUE, FROM I-93 INTERCHANGE TO CENTRAL STREET (APPROX. 1,850 FT)	6/6/2022
5	606718	NEW BEDFORD- INTERSECTION IMPROVEMENTS AT HATHAWAY ROAD, MOUNT PLEASANT STREET AND NAUSET STREET	4/22/2023
5	607531	NORTON- CORRIDOR IMPROVEMENTS & RELATED WORK ON EAST MAIN STREET (ROUTE 123), FROM PINE STREET TO I-495	1/25/2026
5	608820	RAYNHAM- BRIDGEWATER- WEST BRIDGEWATER- BROCKTON- PAVEMENT PRESERVATION AND RELATED WORK ON ROUTE 24	12/23/2022
5	609251	LAWRENCE- INTERSECTION IMPROVEMENTS AT SOUTH BROADWAY (ROUTE 28) AND MOUNT VERNON STREET	8/1/2025
5	608086	AVON- INTERSECTION IMPROVEMENTS AT HARRISON BOULEVARD AND POND STREET	6/15/2022
5	608422	SANDWICH- CONSTRUCTION OF SHARED USE PATH ALONG SERVICE ROAD FROM ROUTE 130 TO CHASE ROAD	5/1/2025
5	606272	BARNSTABLE- INTERSECTION IMPROVEMENTS AT IYANOUGH ROAD (ROUTE 28) AND YARMOUTH ROAD	8/1/2024
5	607572	TAUNTON- CORRIDOR IMPROVEMENTS & RELATED WORK ON BROADWAY (ROUTE 138), FROM LEONARD STREET NORTHERLY TO PURCHASE STREET (PHASE 1)	8/26/2023

District	Project Number	Project Description	Estimated Completion Date
5	608536	NEW BEDFORD- INTERSECTION IMPROVEMENTS AND RELATED WORK AT ROCKDALE AVENUE AND ALLEN STREET	9/1/2022
5	606709	NEW BEDFORD- CORRIDOR IMPROVEMENTS AND RELATED WORK ON KINGS HIGHWAY, FROM CHURCH STREET TO THE KINGS HIGHWAY BRIDGE (N-06-036) OVER ROUTE 140	11/19/2023
5	608079	SHARON- BRIDGE REPLACEMENT, S-09-003 (40N), MASKWONICUT STREET OVER AMTRAK/MBTA	6/10/2024
5	608619	FALL RIVER- BRIDGE REPLACEMENT, F-02-019, WEAVER STREET OVER MASSACHUSETTS COASTAL RAILROAD	5/23/2024
5	605888	TAUNTON- INTERCHANGE IMPROVEMENTS AT ROUTES 24 & 140, INCLUDING REPLACING T-01-045 AND T-01-046	5/2/2027
5	601607	HULL- RECONSTRUCTION OF ATLANTIC AVENUE AND RELATED WORK FROM NANTASKET AVENUE TO COHASSET TOWN LINE	4/17/2025
5	117106	WAREHAM- RECONSTRUCTION OF ROUTE 6 & 28, FROM 500 FT. EAST OF TYLER AVENUE TO RED BROOK ROAD (1.65 MILES)	5/1/2023
5	608618	REHOBOTH- BRIDGE REPLACEMENT, R-04-004, REED STREET OVER PALMER RIVER	6/14/2023
5	608597	ATTLEBORO- STORMWATER IMPROVEMENTS ALONG INTERSTATE 95	3/18/2023
5	608829	STOUGHTON- IMPROVEMENTS AT RICHARD L. WILKINS ELEMENTARY SCHOOL (SRTS)	4/1/2024
5	602261	WALPOLE- RECONSTRUCTION ON ROUTE 1A (MAIN STREET), FROM THE NORWOOD T.L. TO ROUTE 27, INCLUDES W-03-024 OVER THE NEPONSET RIVER	10/30/2023
5	607319	MASHPEE- CORRIDOR IMPROVEMENTS & RELATED WORK ON ROUTE 151, FROM OLD BARNSTABLE ROAD TO THE MASHPEE ROTARY (PHASE 1)	3/20/2025
5	607217	EASTON- CORRIDOR IMPROVEMENTS ON DEPOT STREET (ROUTE 123), FROM NEWELL CIRCLE TO WASHINGTON STREET (ROUTE 138)	3/21/2025
5	608142	OAK BLUFFS- CONSTRUCTION OF A SHARED USE PATH ALONG BEACH ROAD, FROM THE LAGOON POND BRIDGE NORTHERLY TO THE EASTVILLE AVENUE/COUNTY ROAD INTERSECTION	4/20/2023
6	608078	CHELSEA- RECONSTRUCTION ON BROADWAY (ROUTE 107), FROM CITY HALL AVENUE TO THE REVERE C.L.	4/29/2025
6	606635	NEEDHAM- NEWTON- RECONSTRUCTION OF HIGHLAND AVENUE, NEEDHAM STREET & CHARLES RIVER BRIDGE, N-04-002, FROM WEBSTER STREET (NEEDHAM) TO ROUTE 9 (NEWTON)	8/12/2023
6	607901	DEDHAM- PEDESTRIAN IMPROVEMENTS ALONG ELM STREET & RUSTCRAFT ROAD CORRIDORS	10/23/2022
6	606146	CANTON- NORWOOD- WESTWOOD- DEDHAM STREET/I-95 INTERCHANGE RECONSTRUCTION INCLUDING REHABILITATION/REPLACEMENT OF 5 BRIDGES	5/5/2022

Appendix F: Public Well Supply Matrix and Salt Remediation Program

Public Well Supply Matrix and Salt Remediation Program

<i>Property Owner</i>	<i>Owner/Town</i>	<i>Address</i>	<i>Date of Initial Complaint</i>	<i>Last Data Point (mg/l)</i>	<i>General Comment Section</i>
Cambridge	Cambridge Reservoir	Mark Gallagher, Acting Director of Water Operations Cambridge Water Dept. 250 Fresh Pond Parkway Cambridge, MA 02138 (671) 349-4773	Regular monitoring began 1987	March 2021 Hobbs Brook (at intake), Na=151, Cl=243 Stoney Brook (at intake) Na =99, Cl= 151 Fresh Pond (at intake) Na=99, Cl=180	Cambridge Reservoir is adjacent to Route 128 in the Towns of Lexington, Lincoln, Waltham, and Weston. There is a designated RSZ for this area covering 24.6 linear miles and 177.8 lane miles in the vicinity of the water supply covering sections of Routes 2, 2A and 128. Tailgate training for snow and ice personnel occurred November 20 2021. In the 2017 Environmental Status and Planning Report MassDOT agreed to update the 1985 Hobbs Brook Reservoir Sodium Chloride Study, which commenced in spring 2019 and completed in the spring of 2022. Tailgate training for snow and ice personnel occurred November 2022.
Dedham/ Westwood	Dedham/ Westwood	Blake Lukis Executive Director Dedham- Westwood Water Dept. 50 Elm Street Dedham, MA 02027-9137 Telephone (781) 461-2776	File alluded to 3/7/88 correspondence from DWWD requesting MHD refrain from using salt along sections of Rt 128. 12/19/97 telecon b/w Sam Pollock and Mark Hollowell of Anderson-Nichols regarding DEP req'd monthly monitoring and concerns for White Lodge Well #5	3/24/2023 Well #5, Na = 122 Cl = 272	Concern is over a municipal well located to the north of I-95/Route 128 near University Avenue. The well is located in the Fowl Meadow Aquifer that recharges to White Lodge Well No. 5. Correspondence written in March 2004 indicated that we would monitor salt application. MassDOT with UMass has installed monitoring wells and stormwater outfall monitors to evaluate NaCl sources to Fowl Meadow. MassDOT and UMass had been conducting monthly sampling of the well network. The town contacted MassDOT following completion of the study in 2010 to request a RSZ. The results of a mass-balance study indicated that MassDOT's contribution of NaCl was 78%. On Dec 17, 2011 MassDOT held tailgate training at the Dedham depot, identified an overlap, and committed equipment with closed-loop controllers to this section of I-95. MassDOT has implemented improved BMPs, new technology and operational improvements in this watershed. By the end of 2017-2018 winter season all spreader vehicles in the DWWD are equipped with GPS/AVL and we can better track material usage and make real time adjustments if necessary. Tailgate training for snow and ice personnel occurred November 2022. On average, the annual salt usage in the DWWD watershed is approximately 30% less than that used on other District 6 roadways for the past 5 years.
North Chelmsford	North Chelmsford	Paul Pires Superintendent North Chelmsford Water District 64 Washington Street PO Box 655 North Chelmsford, MA 01863-0655 Telephone (978) 251-3931	Mid 1980s	September 7, 2022 WTP/POE Na 104, Cl 268	There is a RSZ in East and North Chelmsford for 153 lane miles consisting of sections of Routes 3, 3A, 4 and Lowell Connector. High arch gambrel salt shed constructed in fall 2011. Tailgate training for snow and ice personnel occurred October 2022.

Public Well Supply Matrix and Salt Remediation Program

<i>Property Owner</i>	<i>Owner/Town</i>	<i>Address</i>	<i>Date of Initial Complaint</i>	<i>Last Data Point (mg/l)</i>	<i>General Comment Section</i>
Auburn	Auburn	Gregory Woods, Superintendent Auburn Water District P.O. Box 187 Auburn, MA 01501 (508)832-5336 ksmith@auburnwaer.com	7/2013	January 2023 Church 1 raw –Na= 181, Cl 277 Church 2 raw –Na=409, Cl 601 Church 3 raw Na= 176, Cl 275	Stream stage and conductivity data are being logged at six locations within Dark Brook Watershed. Runoff discharge and conductivity data for I-90 surface drainage outlet was logged as well due to a result of elevated sodium concentrations in their public water supply well. Tailgate training for snow and ice personnel occurred October 2022.
Middleboro	Middleboro	Michael Bumpus, Water Superintendent Dept. of Public Works 48 Wareham Street Middleboro, MA (508) 946-2482	8/15/1989 & 2/91	March 2021 Miller Na=46 Cl=13 Tispaquin Na=140, Cl=214 East Grove Na=110, Cl=203 Rock 1 Na=75, Cl=31 Rock 2 Na=75, Cl=29.4	A meeting on March 20, 2006 between District 5 and Environmental Personnel discussed town wells and operational improvements. A letter was forwarded on March 29, 2006 to water district. MassDOT continues to implement RSZ in the area for 40 lane miles of Routes 28 and 495. Tailgate training for snow and ice personnel occurred November 2022.
Wilmington	Wilmington	Shelly Newhouse, R.S. Director of Public Health 12 Glen Road, Wilmington, MA 01887 (978) 658-4298	4/29/2005 & 10/19/2011	March 2021 Barrows (raw) Na=149, Cl=248 Brown Na=151, Cl =278	The town reached out to MassDOT in 2011 with concerns regarding elevated sodium in their PWS. MassDOT sent a letter to Wilmington in December 2011 and explained that improved BMPs, new technology and operational improvements, should lead to a reduction of NaCl without a RSZ. Due to the highly developed area MassDOT expressed to the town that they should explore BMPs to address NaCl concentrations. Tailgate training in January discussed the BMPs. On March 15, 2012 a meeting was held with the BOH, MassDOT, and MassDEP to discuss their concerns. MassDOT agreed to improved BMPs and to a follow up meeting in the fall. MassDEP expressed that BMPs seem appropriate and should be given an opportunity to work. Despite MassDOT's efforts, they submitted another request for a RSZ. A meeting was held with the Wilmington and DEP on Nov 26, 2012 and MassDOT held tailgate training on December 8, 2012 to discuss BMPs. Another meeting between the town, DEP and MassDOT was held on November 19, 2013. Tailgate training for snow and ice personnel in Nov '22.

Appendix G: - Environmental Compliance Audit Checklist

ENVIRONMENTAL COMPLIANCE AUDIT CHECKLIST

Facility Information	
Facility Name: _____	Facility Representative: _____
Address: _____	Title: _____
City, State, Zip: _____	Telephone: _____
	Fax: _____

Auditing Information	Regulated Activities
Date of Audit: _____	<input type="checkbox"/> Vehicle Fueling
Auditor: _____	<input type="checkbox"/> Vehicle Washing
Signature: _____	<input type="checkbox"/> Wastewater Recycling System
Environmental Compliance Coordinator: _____	<input type="checkbox"/> Industrial Wastewater Discharge
Persons Interviewed: _____	<input type="checkbox"/> Oil Water Separator
_____	<input type="checkbox"/> Industrial Wastewater Holding Tank
_____	<input type="checkbox"/> Waste Oil Generation
_____	<input type="checkbox"/> RCRA Hazardous Waste Generation
Inaccessible Areas: _____	<input type="checkbox"/> Universal Waste Generation
_____	<input type="checkbox"/> Hazardous Materials Use/Storage
General Comments: _____	<input type="checkbox"/> Solid Waste Accumulation
_____	<input type="checkbox"/> On-Site Sewage Disposal
_____	<input type="checkbox"/> On-Site Drinking Water Well
_____	<input type="checkbox"/> Natural Resources: <input type="checkbox"/> wetlands
_____	<input type="checkbox"/> Riverfront Area
_____	<input type="checkbox"/> USTs <input type="checkbox"/> ASTs
_____	<input type="checkbox"/> MCP Site
_____	<input type="checkbox"/> Existing Clean State Matters
_____	<input type="checkbox"/> AULs
_____	<input type="checkbox"/> Other: _____
_____	Facility Operations
_____	<input type="checkbox"/> Vehicle/Equipment Maintenance
_____	<input type="checkbox"/> Highway Maintenance Support / Staging
_____	<input type="checkbox"/> Snow/Ice Operations
_____	<input type="checkbox"/> Stockroom
_____	<input type="checkbox"/> District Offices
_____	<input type="checkbox"/> Other: _____

SECTION 1: HAZARDOUS WASTE (310 CMR 30.000 and SOP ENV-03)

Citation

YES	NO	N/A	Verification of Generator Status (310 CMR 30.060 and 30.303)	
			Has the facility registered as a Generator of Hazardous Waste and/or Waste Oil? Generator ID No: _____	30.303(1)
			Facility Hazardous Waste Generator Status: <input type="checkbox"/> VSQG <input type="checkbox"/> SQG Facility Waste Oil Generator Status: <input type="checkbox"/> VSQG <input type="checkbox"/> SQG	SQG 30.351(1) VSQG 30.353(1) Waste Oil 30.253(5)
			Is the registered generator status appropriate? VSQG <100 kg/month (~25 gal/month) or SQG <1000 kg/month (~250 gal/month). Review manifests for confirmation.	SQG 30.351(1)(a) VSQG 30.353(1)(a)
			Have appropriate hazardous waste determinations been made for wastes generated at the facility?	30.302
			Verification of the Accumulation Limits	
			If the facility is a VSQG, is the facility within its accumulation limit (<1,000 kg or approximately 250 gallons) of hazardous waste/waste oil?	30.353(1)(b)
			If the facility is an SQG, are there fewer than twenty-seven 55-gallon drums (6,000 kg or approximately 1,500 gallons) of hazardous waste/waste oil at the facility?	30.351(1)(b)
			If the facility has DUAL STATUS (e.g. VSQG of hazardous waste and SQG of waste oil), are the quantities of hazardous waste and waste oil stored at the facility below the maximum allowed for each status? (e.g. < 4 drums of hazardous waste and < 27 drums of waste oil)	30.253(5)
			Waste Container Management (310 CMR 30.253; 30.351; 30.353)	
			Are all hazardous waste containers in good condition? (Note any dents, rust, or damage)	SQG: 30.351(8)(b) VSQG: 30.353(6)(g)
			Are all hazardous waste containers tightly closed (bungs sealed, and bolt ring secured, except when adding/removing waste)?	SQG: 30.351(8)(b) VSQG: 30.353(6)(g)
			Are all hazardous waste containers labeled with the words "Hazardous Waste"?	SQG: 30.351(8)(a) VSQG: 30.353(6)(g)
			Do the labels identify the waste (acetone, toluene, etc.)?	SQG: 351(8)(a) VSQG: 30.353(6)(g)
			Is the waste hazard type (toxic, ignitable, corrosive, and/or reactive) included on each label?	SQG: 30.351(8)(a) VSQG: 30.353(6)(g)
			If the facility is a Small Quantity Generator (SQG), is the date when accumulation began clearly marked on the container label?	30.351(5)
			Is the accumulation time within regulatory limits? (180-days for SQGs)	30.351(5) and (6)
			Are containers compatible with the waste being accumulated?	SQG: 30.351(8)(b) VSQG: 30.353(6)(g)
			Are containers of hazardous waste stored in the designated accumulation area?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Hazardous Waste Accumulation Areas (310 CMR 30.253; 30.351; 30.353)	
			<i>If the facility maintains a Hazardous Waste Accumulation Area:</i>	
			Is the accumulation area secured to prevent unauthorized entry?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Is the accumulation area adequately demarcated? (e.g., visible line on floor and only hazardous waste stored therein)?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Is the accumulation area located on a surface free of cracks/gaps and is impervious to the hazardous wastes being stored, or is secondary containment in use?	SQG: 30.351(8)(b) VSQG: 30.353(6)(h)
			Is the accumulation area labeled as "HAZARDOUS WASTE" with lettering at least 1-inch high?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Is Emergency Information/Contact List posted at the facility phone?	SQG: 30.351(9)(c)(6)
			Is emergency equipment (spill, fire, etc.) located nearby?	SQG: 30.351(9)(c)(3)
			Is secondary containment in use where required (e.g., if located outside)?	SQG: 30.351(8)(b) VSQG: 30.353(6)(h)
			Is the accumulation area in good order (e.g minor spills cleaned up, waste oil drip pans & buckets emptied into waste oil drum)?	SQG: 30.351(8)(b) VSQG: 30.353(6)(h)
			Does the accumulation area have adequate aisle space between drums to allow for inspections of the containers? Does aisle spacing for ignitable or reactive waste meet NFPA requirements?	SQG: 30.351(8)(b)

SECTION 1: HAZARDOUS WASTE (CONT'D)

Citation

YES	NO	N/A		
			<i>If the facility does NOT maintain a Hazardous Waste Accumulation Area:</i>	
			Is the waste transported to a designated facility on the day of generation or within 3 days of filling a container?	VSQG: 30.353(6)(i)
			Hazardous Waste Satellite Accumulation Areas (310 CMR 30.253; 30.351; 30.353):	
			<i>If the facility maintains a Satellite Hazardous Waste Accumulation Area:</i>	SQG: 30.351(4) VSQG: 30.353(6)(i)
			Is there only one drum/container for each waste type? (limit one container up to 55-gallons)	See above
			Is the satellite accumulation area at or near the waste's point of generation?	See above
			Is the satellite accumulation area managed by the person responsible for the area/operations generating the waste?	See above
			Are container labels complete? (e.g. "Hazardous Waste," type of waste, & hazard associated with waste)	See above
			Are wastes moved to the accumulation area or shipped within 3 days of the satellite container becoming filled?	See above
			Are containers compatible with the waste?	See above
			Are containers closed when not adding/removing waste?	See above
			Is secondary containment in use where required/warranted? (e.g., if located outside)	See above
			Are containers in good condition?	See above
			If the facility is an SQG, are weekly inspections conducted and any problems fixed?	See above
			Hazardous Waste Recordkeeping (310 CMR 30.253; 30.351; 30.353; 30.310; 30.330; 30.750)	
			<i>All Hazardous Waste Generators:</i>	
			If SQG, are weekly inspection records of the hazardous waste and satellite accumulation areas maintained? (One Year)	30.351(8)(b)
			<i>If the facility is a VSQG and self-transport hazardous waste:</i>	
			Is a receipt received from the destination facility and on file?	30.353(7)
			<i>If the facility does NOT self-transport hazardous waste (VSQG, SQG):</i>	
			Are hazardous waste manifests used when shipping hazardous wastes?	30.311(1)
			Are manifest records maintained for three years?	30.331(1)
			Has the facility received all return copies of manifests from receiving facilities and maintained for 3 years?	30.331(1)
			Is the hazardous waste generator ID number properly written on each manifest?	30.311(1)
			If the facility has not received a return copy of a manifest from the disposal facility in 45 days, has the facility filed an Exception Report and are these Exception Reports maintained for 3 years?	30.333(1) and (2) 30.331(3)(b)
			Are copies of Land Ban Certifications completed and maintained for 3 years?	40 CFR 268.7
			Did the manifests reviewed demonstrate that the facility is appropriately disposing of all waste to only licensed facilities via licensed transporters?	30.311(2) and (3)
			<i>If SQG of Hazardous Waste or Waste Oil:</i>	
			Has the facility made an attempt to notify the police department, fire department, local board of health, and emergency response teams as to the facility layout, the hazards associated with the wastes, location of the hazards, and possible emergency evacuation routes? (e.g., with a signed and dated letter)	30.351(9)(j) and (k)
			Are applicable employees trained as to their duties related to hazardous waste handling?	30.351(9)(g)
			Universal & Special Waste (310 CMR 30.1000 and ENV-07)	
			<i>Universal Waste Batteries (skip subsection if not generated)</i>	
			Are universal waste batteries stored in a container or other manner suitable for preventing/containing possible leakage? (This is only required if there is evidence of leakage, spillage, or damage that could cause leakage.)	30.1034(1)
			Is battery container labeled with "Universal Waste – Batteries"?	30.1034(1)(d)
			Is battery container labeled with accumulation start date?	30.1034(6)(c)
			Is the accumulation date no more than one year old?	30.1034(6)(a)
			<i>Universal Waste Mercury Containing Lamps and/or Devices (skip subsection if not generated)</i>	
			Are devices stored in a container or other manner suitable for preventing/containing possible breakage? (This is only required if the device or lamp is leaking or broken)	30.1034(4) and (5)
			Is storage container labeled with "Universal Waste-Mercury Containing Devices" or "Universal Waste-Mercury Containing Lamps" for fluorescent bulbs?	30.1034(4)(d) 30.1034(5)(e)
			Are containers labeled with the start date of accumulation?	30.1034(6)(c)
			Is the accumulation date no more than one year old?	30.1034(6)(a)

SECTION 1: HAZARDOUS WASTE (CONT'D)

Citation

YES	NO	N/A	Lead Acid Batteries (310 CMR 30.280, SOP ENV-05)	
			Are used lead acid batteries appropriately stored and not open or leaking? Leaking batteries must be handled as a hazardous waste.	310 CMR 30.280(2)
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Hazardous Waste Management at MassDOT Highway Facilities?	ENV-01-03
			Used Vehicle Battery Disposal at MassDOT Highway Division Facilities?	ENV-01-05
			Universal Waste Management at MassDOT Highway Division Facilities?	ENV-01-07
			Roadside Unknown Waste Handling?	ENV-01-25
			Used Oil Fired Space Heaters (310 CMR 30.200, 527 CMR 4.03, 310 CMR 7.04(9), and SOP -37)	
			Does the facility have a DEP Class A Recycling Permit that was issued by February 27, 2004?	30.222(5)(b)
			If not, was a one-time Class A Recycling Notification Form submitted to the DEP?	30.222(5)(b)
			Does the facility have approval to operate a waste oil burner from the local fire department?	527 CMR 4.03(1)
			Can the facility demonstrate that no speculative accumulation has occurred?	30.205(14)
			Are all Used Oil FUEL containers properly labeled? (Burner Tank: Regulated Recyclable Material, USED OIL FUEL, Toxic; Drums: Regulated Recyclable Material, USED OIL FUEL, Toxic, and labeled with the accumulation start date.)	30.205(19)
			Is the space heater operated only between September 15 th and June 15 th ? (7.04(9)(d)4.)	7.04(9)(d)4.

SECTION 2: HAZARDOUS MATERIALS

YES	NO	N/A	Hazardous Materials Management (454 CMR 21.00, 40 CFR 355, and SOPs ENV-02, -06, -08, 09, -11)	
			Are hazardous material containers labeled with the name of their contents?	MGL 111F Chapter 7(a)
			Are storage tanks/dispensers and containers having capacities greater than 5 gallons labeled with an NFPA label?	MGL 111F Chapter 7(a)
			Does the Facility have any Extremely Hazardous Substances equal to or greater than the Threshold Planning Quantity?	40 CFR 355
			If Yes, has there been a release above and RQ?	40 CFR 355
			If Yes was the SERC or LEPC notified?	40 CFR 355
			Are SDS maintained at the Facility or available upon request?	MGL 111F Chapter 11
			Has a list of hazardous materials been filed with DEP? (e.g., with a signed and dated letter)	MGL Ch 111F(16)
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Handling, Storage, and Disposal of Compressed Gas Cylinders at MassDOT Highway Division Facilities?	ENV-01-06
			Management of Sand and Deicing Chemicals at MassDOT Highway Division Facilities?	ENV-01-08
			Hazardous Materials Management at MassDOT Highway Division Facilities?	ENV-01-11

SECTION 3: SOLID WASTE AND RECYCLABLE MATERIALS

YES	NO	N/A	Solid Waste Management (310 CMR 16.00 & 19.000 and SOPs ENV-10 and -12)	
			Are the solid wastes and/or recyclable materials present at the facility separated by type and/or stored in designated accumulation areas and trash stored in a covered dumpster?	ENV-01-12
			Are street sweepings stored in accordance with requirements of DEP Policy?	DEP Policy #BWP-94-092
			Is there any evidence of restricted/banned materials in the trash dumpster (batteries, lamps, waste oil, metal, whole tires, recyclable paper/cardboard, yard waste, etc.)?	310 CMR 19.017
			Are cathode ray tubes (CRTs) collected, stored, handle and transported in a manner that prevents and minimizes breakage and stored/segregated from other solid waste?	310 CMR 19.017(3)(c)
			Is there an active or inactive landfill or dumping ground at the Facility?	
			If yes, has the landfill/dumping ground been approved or closed or is it being closed in accordance with a DEP approved plan?	310 CMR 19
			If the landfill/dumping ground has been closed, is it in compliance with the post-closure requirements?	310 CMR 19.142
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Disposal of Animal Carcasses?	ENV-01-10
			Temporary Storage of Solid Waste and Recyclable Materials at MassDOT Highway Division Facilities?	ENV-01-12

SECTION 4: STORAGE TANKS

YES	NO	N/A	Storage Tank Management (310 CMR 80 and SOPs ENV-01-28 and -38)	
			Underground Storage Tanks (310 CMR 80)	
			Is a sign indicating what steps to follow in the event of a UST system emergency, including but not limited to the name and phone number of the person or person to contact in the event of an emergency, posted and readable from 10 feet away?	310 CMR 80.25
			Are the USTs equipped with secondary containment, spill and overflow protection, and leak detection?	310 CMR 80
			Are steel USTs/underground piping equipped with cathodic protection?	80.22
			Are cathodic protection systems tested and calibrated every annually or triennially, as applicable?	80.29(2)
			Are leak detection systems tested annually in accordance with manufacturer recommendations?	80.26(3)(d)
			Is leak detection equipment maintained in operating condition?	80.26(2)
			Has the tank been inspected by a third party within the past three years?	80.49
			Have spill buckets been appropriately maintained, inspected, and tested? (by 1/2/17)	80.28
			Has overfill prevention equipment been appropriately inspected and tested?	80.28(3)
			Is the UST system's compliance certification up to date?	80.34
			Is the UST system inspected monthly?	80.35
			Are all required records being kept (may be on-site or easily accessible off-site)?	80.36
			<i>If the UST system is inoperable or a testing or functional failure has occurred:</i>	
			Has the facility taken steps to initiate repair of the system?	80.26, 80.33
			<i>If the Facility Dispenses Gasoline (310 CMR 7.24) and is equipped with a Stage I vapor recovery system:</i>	
			Is the gasoline dispensing operation equipped with a Stage I vapor recovery system?	7.24(3)(b)
			Is the Stage I system inspected weekly and results recorded on an inspection checklist?	7.24(3)(d)
			Is a Stage I Annual In-use Compliance Certification submitted to MassDEP yearly?	7.24(3)(e)
			Are all of the Stage I inspection checklists, training records, compliance testing results, and maintenance records for the last twelve months and the Stage I system's most recent In-use Compliance Certification or Installation/Substantial Modification Certification retained on-site in either hard copy or electronic format?	7.24(3)(d)
			All Tanks (310 CMR 80)	
			Are there any abandoned tanks at the facility?	80.44
			If yes, describe out of service date(s) and status of any DEP notification and/or closure/removal:	
			Spill Prevention (40 CFR 112)	
			Does the facility store oil in aboveground tanks or drums in quantities equal to or greater than 1,320 gallons?	40 CFR 112.1(d)(2)(ii)
			If Yes, does the facility have an up-to-date and P.E.-certified SPCC Plan?	40 CFR 112.3(d)
			If Yes, is the facility implementing the SPCC Plan?	40 CFR 112.3
			In addition to the specific compliance areas above, is the facility in compliance with the following SOP:	
			Inspection And Repair Of Stage I And Stage II Recovery Systems Associated With Underground Storage Tanks?	ENV-01-28

SECTION 5: WATER QUALITY

YES	NO	N/A	Drinking Water Supply (310 CMR 22.22)	
			What is the Facility's water supply source? <input type="checkbox"/> Private Well <input type="checkbox"/> Municipal Public Water Supply <input type="checkbox"/> Other: If the facility is supplied with municipal water answer backflow devices questions below.	
			Does the facility have backflow prevention devices on threaded hose connections?	22.22(2)(b)
			Have applicable devices been registered with the Public Water Supplier?	22.22(2), 22.22(7)(b)
			Septic Systems (310 CMR 15.000, SOP ENV-17)	
			Does the facility discharge to a subsurface sewage disposal system (septic system)?	
			If present and installed on or after 3/31/95, has the facility received a certificate of compliance (COC) for the septic system?	310 CMR 15.021
			If present, is only sanitary wastewater discharged to the septic system (i.e., no process water/chemicals)?	310 CMR 15.004
			Drainage Systems (314 CMR 1-15)	
			Does the facility have a floor drain(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, where do they discharge to: <input type="checkbox"/> POTW <input type="checkbox"/> Surface Water <input type="checkbox"/> Ground <input type="checkbox"/> Holding Tank <input type="checkbox"/> Other Describe:	
			If floor drains are located in an area of hazardous material storage or maintenance areas, do the drains discharge to a sanitary sewer or to an industrial wastewater holding tank?	
			If the facility discharges process wastewater to a municipal sewer system, has the facility notified the POTW of the discharge to determine whether a permit is required?	314 CMR 7.00
			If floor drains, have been sealed, did the facility file a WS-1 form with the DEP? (NA for drains connected to sanitary sewer)	310 CMR 27.10
			If floor drains discharged to the ground, did facility close underground structure(s) and file UIC Notification Form with DEP?	310 CMR 27.10
			Are there any oil/water separators on-site?	
			If present, are oil/water separators inspected and serviced periodically (as required in some areas, such as MWRA)? If a permit has been issued, are the facility oil/water separators in compliance with permit requirements?	MWRA: 360 CMR 10.016(4) or permit
			Stormwater Discharges (310 CMR 27.00; 314 CMR 3.00; 314 CMR 5.00, SOP ENV-19)	
			Are there stormwater catch basins on the property?	
			If Yes, where do the catch basins discharge? <input type="checkbox"/> POTW <input type="checkbox"/> Surface Water <input type="checkbox"/> Ground <input type="checkbox"/> Other, describe:	
			If present, have leaching catch basins located within process areas been registered with the DEP (Class V Injection Well Registration)?	310 CMR 27.08
			Vehicle Washing (310 CMR 1-15; 40 CFR 122, SOP ENV-22)	
			<i>If facility is a Designated Vehicle Washing Facility:</i>	
			Are vehicles washed only indoors?	
			Is the facility equipped with floor drains connected to either the municipal sewer or wash water recycling system, or is the facility equipped with an approved holding tank?	
			<i>If facility is NOT a Designated Vehicle Washing Facility:</i>	
			Are vehicles only rinsed onsite (no detergents or heated water/steam)?	
			If the facility has an Industrial Wastewater Holding Tank: (Existing Permits; 314 CMR 18.00)	
			If the tank was installed before November 15, 2002, does the facility have a DEP Industrial Wastewater Holding Tank plan approval?	314 CMR 18.00
			For applicable holding tanks, has the Facility submitted a one-time compliance certification to DEP (due by February 15, 2003, or within 60 days for new tanks)? (Not required if the Facility has a DEP-issued plan approval for the holding tank.)	18.10(1)
			Does the Facility maintain holding tank construction and installation records (until tank is decommissioned) and records on pumping and wastewater shipments/disposal (three years)?	18.09(1)
			If an existing holding tank was not installed in accordance with PE Certified Plans, has the holding tank undergone an integrity assessment (due by November 15, 2003)?	18.08(2)
			Is the Holding Tank labeled as "Non-Hazardous Industrial Wastewater?" (required for underground and aboveground tanks)	18.07(6)
			Is the Holding Tank equipped with a high level alarm? If yes, is the alarm functioning properly?	18.07 or 18.08
			If the tank was installed on or after November 15, 2002, is the holding tank inspected for leakage weekly?	18.08(3)(c)
			Is the alarm system tested by an electrician on a semi-annual basis?	ENV-01-18
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Groundwater Monitoring Well Maintenance at MassDOT Highway Division Facilities?	ENV-01-16

ENVIRONMENTAL COMPLIANCE AUDIT CHECKLIST

Page 7 of 9

			Maintenance of Subsurface Sewage Disposal Systems at MassDOT Highway Division Facilities?	ENV-01-17
			Maintenance of Wastewater Holding Tanks and Proper Disposal of Accumulated Wastewater at MassDOT Highway Division Facilities?	ENV-01-18
			Inspection and Maintenance of Stormwater Catch Basins at MassDOT Highway Facilities?	ENV-01-19
			Vehicle Washing at MassDOT Highway Facilities?	ENV-01-22
			Inspection and Maintenance of Oil/Water Separators (OWS) at MassDOT Highway Division Facilities?	ENV-01-27

SECTION 6: NATURAL RESOURCE AREAS

YES	NO	N/A	Wetlands, Buffer Zones, and Riverfront Zones (310 CMR 9.00 & 10.00, SOP ENV-15)	
			Are there any Natural Resource Areas (wetland, buffer zone, or riverfront zone) at the property? (If NO, go to next section)	10.02(1) and 10.03
			Is the facility conducting work in a Natural Resource Area (e.g. removing, filling, dredging, or altering)?	9.05 10.02-10.05(6)
			If the facility is conducting work in a Resource Area, was a Request for Determination of applicability, or NOI submitted to and approved by the local Conservation Commission, and was a Certificate of Compliance received upon work completion?	10.05(4), 10.05(9)
			If issued, is the facility in compliance with wetlands Order of Conditions or enforcement order?	310 CMR 10.02-05
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Protection of Wetland Resource Areas at MassDOT Highway Facilities?	ENV-01-15

SECTION 7: POLLUTION PREVENTION

YES	NO	N/A	Spills/Releases (310 CMR 40.0000; 40 CFR 300; 40 CFR 355, SOPs ENV-03, -07, -11, and -20.)	
			Is there an indication of a release or threat of release of oil and/or hazardous material at the facility?	310 CMR 40.0000
			If yes, describe event(s) and actions taken, including notifications made.	
			Is there an MCP site at the facility in which a permanent solution has not been achieved?	310 CMR 40.0000
			If yes, have MCP/Clean State timelines been met? Describe status and conditions:	
			Is there an AUL at the facility?	310 CMR 40.0000
			Is the facility in compliance with the terms of the AUL?	
			Asbestos (310 CMR 7.09 & 7.15; 453 CMR 6.00)	
			Has the facility conducted building renovations/demolitions or asbestos abatement projects?	453 CMR 6.01 - .02
			If yes, was an asbestos survey conducted prior to renovation/demolition?	310 CMR 7.15(4)
			Prior to renovation/demolition, was DEP properly notified using ANF 001 Form?	310 CMR 7.09 and 7.15 453 CMR 6.12
			If an asbestos abatement project was conducted, were licensed contractors used?	453 CMR 6.03
			If an asbestos abatement project was conducted, was asbestos containerized for offsite disposal at a licensed facility?	453 CMR 6.13(2)(b) 453 CMR 6.14(4)(h)
			Outdoor Operation/Maintenance Equipment Storage at MassDOT Highway Facilities?	ENV-01-20
			Management of Asbestos Containing Materials at MassDOT Highway Division Facilities?	ENV-01-29

SECTION 8: AIR QUALITY

YES	NO	N/A	Air Emissions, Permits & Recordkeeping (310 CMR 7.00)	
			Parts Cleaners	
			Is a solvent parts cleaner used?	310 CMR 7.18(8)
			If yes, is the unit a sink-like work area with a remote solvent reservoir with an open drain area less than 100 square cm?	310 CMR 7.18(8)
			If this is not the case, is the unit equipped with a functioning cover, which is kept closed when not in use?	310 CMR 7.18(8)
			Refrigerant Management	
			Does the facility conduct vehicle refrigeration maintenance?	40 CFR 82
			If yes, are personnel who perform refrigerant work certified by EPA?	40 CFR 82.34(a)(2)
			Is refrigerant recovery equipment EPA-certified?	40 CFR 82.34(a)(1)
			Has the facility submitted a Notification Form with EPA for use of the refrigeration equipment?	40 CFR 82.42(a)

SECTION 9: TRAINING

YES	NO	N/A	Training Records	
			Does the facility have the following training records on file, where applicable:	
			Hazardous Waste Management training?	SQG: 30.351(9)(g)
			Universal Waste Management Training?	30.1035
			Stage I Vapor Recovery System training?	7.24(6)(b)2.
			Spill Prevention, Control, and Countermeasure Plan training?	40 CFR 112.7(f)
			UST Class A/B/C Operator Training?	310 CMR 80.37
			Other (list)?	

SECTION 10: CLEAN STATE PROGRAM

YES	NO	N/A	Clean State Program Management	
			Are there any existing Clean State Matters for the facility?	Policy ENF-05-001
			If Yes, list and describe status:	

Additional notes/Comments:

Appendix H: Litter Program Summary (Number of Bags of Trash)

District	Inmate Litter Program	Adopt-a-Highway Program	Private Contracted Assistance	By MassDOT Staff	Total*
1	N/A	N/A	N/A	N/A	2,459
2	N/A	N/A	N/A	N/A	7,390
3	N/A	N/A	N/A	N/A	1,613
4	1,585	1,471	9,781	12,989	25,826
5	1,761	2,795	29,318	17,489	51,363
6	1,250	1,100	1,600	1,750	5,700
Total Number of Bags of Trash for Permit Year 20					94,351

*Districts 1, 2, and 3 reported by total only.